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## ROCKY MOUNTAIN SPOTTED FEVER: VACCINATION OF MONKEYS AND MAN

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In a previous publication<sup>1</sup> we have shown that guinea pigs may be successfully vaccinated against Rocky Mountain spotted fever by injections of phenolized emulsions of tick virus. Data are now submitted which (1) prove that this vaccine will also protect monkeys and (2) suggest that it will confer immunity upon man.

### PREPARATION OF THE VACCINE

The production of a potent vaccine from tick emulsions is dependent upon a high concentration of virus in the ticks from which it is prepared. By the injection of decreasing amounts of emulsions of infected tick viscera into guinea pigs, the minimal infectious dose of any given emulsion may be approximately determined. After many such titrations, employing fed and unfed infected ticks (*D. andersoni*) at all stages of the life cycle, it has been found that the highest concentrations of spotted fever virus occur two to four days after the beginning of the adult feeding.<sup>2</sup>

Such ticks, usually in lots of 100, are permitted to feed three days on guinea pigs, then at once eviscerated one by one and ground in a mortar for 10 or 15 minutes with sterile sand and a few cubic centimeters of salt solution. By this procedure the internal organs

<sup>1</sup> Spencer, R. R., and Parker, R. R.: Rocky Mountain Spotted Fever: Experimental Studies on Tick Virus. *Pub. Health Rept.*, Nov. 28, 1924. (Reprint No. 976.)

<sup>2</sup> *Rearing of infected ticks for the preparation of the vaccine.*—The rearing of adult ticks from which the vaccine is made is a prolonged and tedious process. Potent virus can not be obtained from the tick in the same stage in which it receives the infection. Virus ingested by larvae does not increase appreciably in the engorged larvae. It is not until the next stage, or nymphs, that any increase in amount or virulence is apparent, while in the succeeding adult stage the increase is often greater than in the nymphs. The ticks which serve as culture tubes must be infected as larvae and then reared to adults; for it is in the adult ticks that the virus is most constantly of high virulence. It is therefore necessary to begin operations in the spring before that in which the vaccine is to be used. Adult males and females are selected from lots which have been reared in the laboratory and proved free from spotted fever and other infection by tests carried out during the earlier stages of the life cycle. The females are brought to full engorgement on rabbits, fertilization by the males occurring during the feeding. Each engorged female is placed in a separate pill box, assigned a lot number, and placed over moist sand. Egg deposition and hatching follow. The progeny of each of these females are carried forward as a unit. As larvae and again as nymphs each lot is permitted to engorge on a host. An infected rabbit is used for feeding the larvae and later a normal rabbit for the nymphs. After each engorgement a few ticks are injected intraperitoneally into guinea pigs to determine whether spotted fever infection has been acquired and to check again the absence of extraneous infection. After the nymphs have molted to adults they should be permitted to remain quiescent a few months, since experience has shown that recently molted adults do not as consistently yield as strong virus as those which are older.

are easily separated from the fragments of chitin which quickly settle to the bottom and a fairly homogenous emulsion is obtained. The emulsion is next diluted with sufficient salt solution so that each cubic centimeter contains the equivalent of the viscera of two or more ticks. At this stage the minimal infectious dose for guinea pigs is determined by the injection of graded dilutions, using two guinea pigs for testing each dilution. If either of the guinea pigs receiving one-thousandth of a tick fails to develop spotted fever, the material is not considered suitable for the preparation of a potent vaccine. Minimal infectious doses of one five-thousandth of a tick are preferable. The emulsion is now diluted with salt solution so that each cubic centimeter contains the equivalent of one tick, and phenol is added at the same time to make the final product contain 0.5 per cent of the preservative. The mixture is permitted to remain two or three days at room temperature. During this time a rather heavy precipitate forms and extraneous organisms are killed, as shown by subsequent anaerobic and aerobic sterility tests. The precipitate is best separated by slow centrifugation, since the emulsion does not pass readily through filter paper, and since its potency is destroyed if passed through a Berkefeld filter. The supernatant fluid, which is the material used as a vaccine, has a moderate turbidity (less than 200 parts per million).

The precipitate after drying also has been shown to possess protective qualities if reemulsified and injected into guinea pigs. No further study of this fraction has been made up to the present time.

#### DOSAGE

We have found it difficult to determine the minimal protective dose for guinea pigs. A small amount of a given lot of vaccine may protect one guinea pig while an equal and sometimes larger amount of the same material fails to protect another animal of approximately equal weight. In comparing the potency of two batches of vaccine, one would expect higher protection from the lot which gave the lowest minimal infectious dose before the contained virus was killed with phenol. This is not necessarily the case. Such irregularities are not surprising, however, when we recall that so little is known of the various factors affecting the process and mechanism of immunity. Typical tests upon three batches of vaccine are given below.

*Typical tests on three batches of vaccine*

Pig No.	Dose of vaccine <sup>1</sup>	Result of blood virus injection (1 c. c.) 12 days later	Pig No.	Dose of vaccine <sup>1</sup>	Result of blood virus injection (1 c. c.) 12 days later
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Vaccine No. 130—Live virus titration = 1/1,000 c. c. (1/1,000 tick) M. I. D. Prepared Apr. 2, 1925; tested Apr. 15, 1925

1	<i>C. c.</i> $\frac{1}{4}$	Spotted fever. Recovered.	4	<i>C. c.</i> $\frac{1}{2}$	Spotted fever. Died.
2	$\frac{1}{4}$	Spotted fever. Died.	5	1	Died from secondary infection.
3	$\frac{1}{2}$	Immune.	6	1	Immune.

Vaccine No. 221—Titration = 1/1,000 tick (M. I. D.). Prepared Mar. 31, 1925; tested Apr. 15, 1925

7	<i>C. c.</i> $\frac{1}{4}$	Immune.	10	<i>C. c.</i> $\frac{1}{2}$	Immune.
8	$\frac{1}{4}$	Died early of secondary infection.	11	1	Do.
9	$\frac{1}{2}$	Immune.	12	1	Do.

Vaccine No. 223—Titration = 1/5,000 tick (M. I. D.). Prepared Apr. 11, 1925; tested Apr. 15, 1925

13	<i>C. c.</i> $\frac{1}{4}$	Spotted fever. Recovered.	16	<i>C. c.</i> $\frac{1}{2}$	Immune.
14	$\frac{1}{4}$	Spotted fever. Died.	17	1	Do.
15	$\frac{1}{2}$	Immune.	18	1	Do.

<sup>1</sup> Each dose of vaccine given in cubic centimeters also represents the same fraction of a tick.

Guinea pig No. 3 was protected by one-half cubic centimeter of vaccine No. 130, but the same amount did not protect guinea pig No. 4.

Guinea pig No. 7 was protected by one-fourth cubic centimeter of vaccine No. 221, but one-fourth cubic centimeter of vaccine No. 223 failed to protect guinea pigs No. 13 and No. 14, although this vaccine was prepared from an emulsion containing 5,000 M. I. D. per cubic centimeter as compared with 1,000 M. I. D. in vaccine No. 221.

In amounts smaller than one-fourth cubic centimeter the vaccine has frequently modified, but never completely prevented, the infection. On the other hand, 1 cubic centimeter amounts have invariably protected guinea pigs when the minimal infectious dose of the live virus emulsion was one five-thousandth cubic centimeter. More concentrated lots of vaccine so prepared that the equivalent of two ticks was contained in each cubic centimeter have been used with good results. Higher concentrations than this, however, yield emulsions of great turbidity.

The majority of our preparations have lost their protective quality after 5 or 6 weeks, but we have encountered one lot which fully protected guinea pigs in 1 cubic centimeter amounts after six months' storage in the ice box.

Guinea pigs receiving two doses of 1 cubic centimeter each have shown immunity to 1 cubic centimeter of blood virus as long as eight months. Tests for longer periods were not made.

These tests merely indicate what may be expected as to the duration of immunity, the minimal protective dose, and the keeping qualities of the vaccine. At the present time our data are too meager to justify the making of generalizations.

#### VACCINATION OF MONKEYS

Tables 1 and 2 show complete protection of vaccinated monkeys against 1 cubic centimeter of blood virus (500 to 1,000 M. I. D. per cubic centimeter for guinea pig) and against one-tenth cubic centimeter of tick virus (500 M. I. D.). All five control monkeys died showing a typical rash. A spleen emulsion of monkey No. 10 produced typical fever and symptoms when injected into guinea pigs. The eight vaccinated animals remained well.

TABLE 1.—*Vaccine No. 210—Vaccination of M. rhesus*

[Vaccine prepared Feb. 19, 1925; injected subcutaneously. Titer=1/3,000 tick]

No.	First dose Feb. 25, 1925	Second dose Mar. 2, 1925	Immunity test Mar. 12, 1925	Result
1	Control		1 e. e. blood virus	Mar. 25, 1925.—Dead. Typical spotted fever and rash.
2	do		do	Do.
3	do		do	Mar. 22, 1925.—Dead. Typical spotted fever and rash.
4	1 e. e.		do	Apr. 4, 1925.—Active and healthy.
5	do		do	Do.
6	do	1 e. e.	do	Do.
7	do	2 e. e.	do	Do.
8	do	do	do	Do.

TABLE 2.—*Vaccine No. 219—Vaccination of capuchin monkeys*

[Vaccine prepared Mar. 21, 1925; injected subcutaneously. Titer=1/1,1000 tick]

No.	First dose Mar. 25, 1925	Second dose Apr. 1, 1925	Immunity test Apr. 11, 1925	Result
9	Control		1/10 e. e. tick virus	Apr. 21.—Dead. Typical spotted fever.
10	do		do	Do.
11	1.5 e. e. vac- cine.	1.5 e. e. vac- cine.	do	Remained well; discharged June 1.
12	do	do	do	Do.
13	do	do	do	Do.

#### EXPERIMENTAL VACCINATION OF MAN

In investigations of Rocky Mountain spotted fever or other disease transmitted by insect vectors, no attempt has been made, so far as we are aware, to protect man by inoculating material from an intermediate host. Breinl<sup>3</sup> has shown that guinea pigs may be protected against typhus fever by injecting phenolized emulsions of infected lice, but the method was not applied to man.

<sup>3</sup>Breinl, F.: Studies on Typhus Virus in the Louse. *Jour. of Inf. Dis.*, January 1924, vol. 34, No. 1, pp. 1-12.

Up to the present time a total of 34 people, chiefly laboratory and field workers in Rocky Mountain spotted fever and others whose occupations expose them to infection, have been vaccinated. Each lot of vaccine for human use was first tested for sterility, following the Hygienic Laboratory technique required for biologic products, and for protective quality and harmlessness by injection into guinea pigs.

The vaccine was administered subcutaneously in doses of 1 or 2 cubic centimeters each at five-day intervals. Some have received two, some three, and some four injections. No severe reactions have been encountered. The total number of M. I. D. for guinea pigs per vaccinated individual has varied from 2,000 to 17,500. The greatest number used for one injection has been 10,000. The vaccines used have contained 1,000, 5,000, and 10,000 M. I. D. of killed virus per cubic centimeter.

Local redness, swelling, and heat, reaching a maximum within 48 hours, is the rule. Slight headache and muscular pains occurred in a few instances, but no elevations of body temperature developed, and all persons vaccinated carried on their duties as usual. The reactions following the first injection have been exceedingly mild, but in some individuals they increased in intensity and duration after the last injection, suggesting an increasing sensitiveness.

One person who gave a history of extreme sensitiveness to the bite of insects developed a general itching, with watering of the eyes, almost immediately following the first injection. For two weeks there appeared and disappeared several crops of an urticarial rash, accompanied by itching. The condition, however, did not interfere with the performance of his regular duties. An intradermal injection of one-tenth cubic centimeter of the vaccine given two weeks later was followed immediately by an urticarial wheal 1 inch in diameter. It is believed that the intradermal test may be used to detect any sensitive individual and thus avoid severe reactions.

#### DEMONSTRATION OF PROTECTIVE BODIES IN THE SERUM OF VACCINATED ANIMALS AND OF MAN

On May 22, 1924, 1 cubic centimeter of serum from each of 12 normal Belgian rabbits was mixed with 1 cubic centimeter of guinea pig blood virus and immediately injected intraperitoneally into guinea pigs. All of these animals developed typical spotted fever, from which only one recovered, demonstrating that the normal rabbit sera contained no virus-neutralizing substances. The rabbits were subsequently each given subcutaneously three injections of vaccine (May 22, May 26, and June 13). On August 21, 2 rabbits having died of intercurrent infection, 1 cubic centimeter of the serum of each of the remaining 10 was again mixed with 1 cubic centimeter of blood

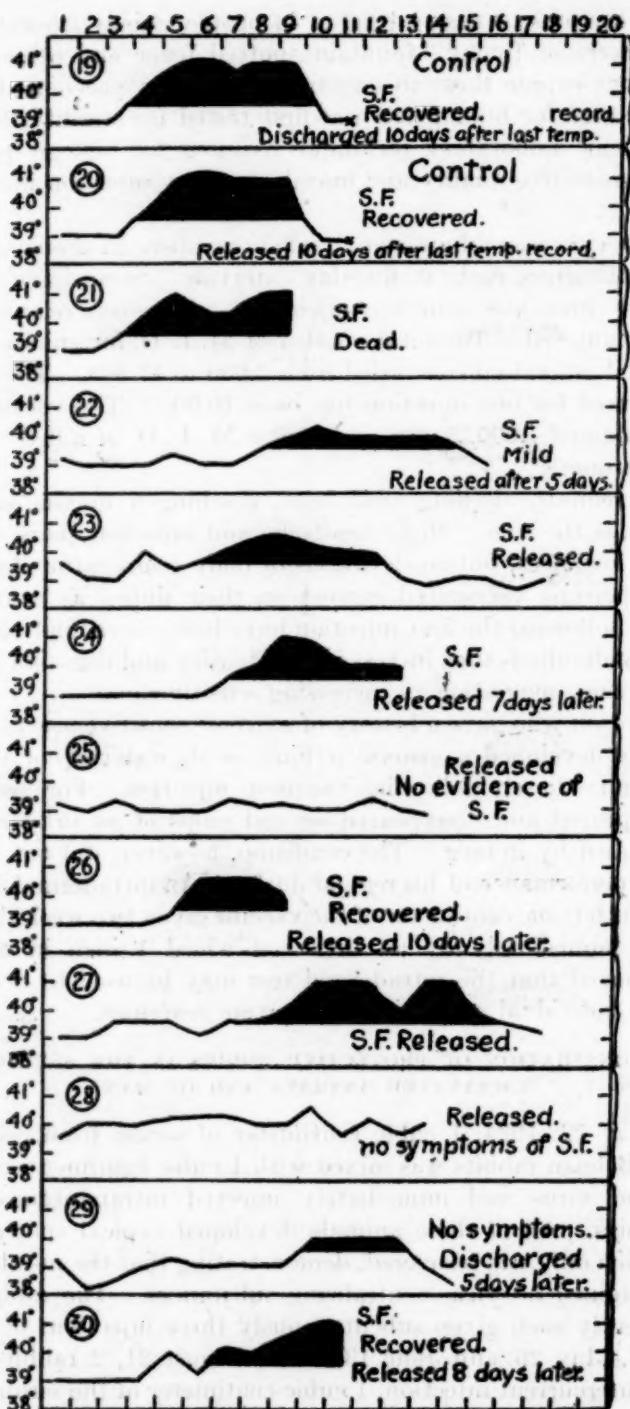


CHART 1.—Daily temperatures of guinea pigs injected with mixtures of serum from vaccinated rabbits and blood virus. (Temperatures above  $39.6^{\circ}$  C. are regarded as definite fever, and areas between this line and the temperature curve are shaded in black.)

virus and immediately injected into fresh pigs. The sera of two fresh rabbits were used as controls. Chart No. 1 gives the results of these inoculations. The sera of the controls (Nos. 19 and 20) and of one of the vaccinated rabbits (No. 21) did not apparently affect the virus. However, two of the guinea pigs (No. 25 and No. 28) developed no symptoms of fever and all the others gave a markedly delayed incubation period.

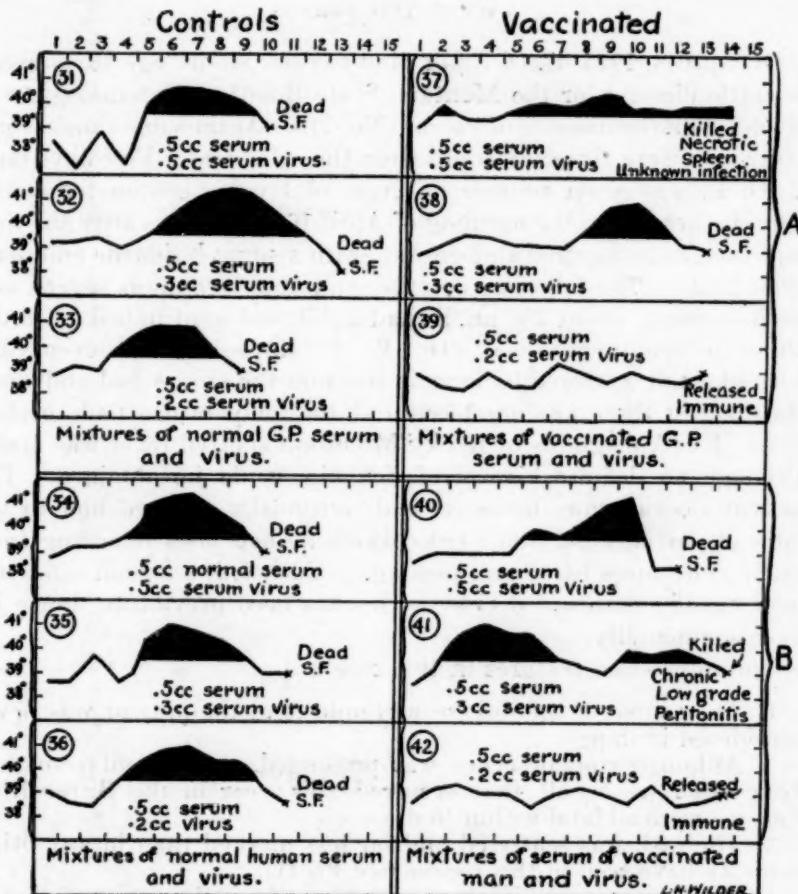


CHART 2.—Daily temperatures of guinea pigs injected with (A) mixtures of serum from vaccinated guinea pigs and decreasing amounts of blood virus, and (B) mixtures of serum from vaccinated man and decreasing amounts of blood virus.

Chart No. 2 gives the result of injecting into guinea pigs mixtures of blood virus with (1) serum from vaccinated guinea pigs and (2) with serum from vaccinated man. This time the mixtures were permitted to remain one hour at room temperature before inoculating.

Guinea pigs No. 31, No. 32, and No. 33 were injected with mixtures of normal guinea pig serum and virus. Guinea pigs No. 34, No. 35, and No. 36 were injected with mixtures of normal human serum and

virus. All six of these control animals died promptly of spotted fever. Guinea pigs No. 39 and No. 42 show that 0.5 cubic centimeter of serum of a vaccinated guinea pig and of a vaccinated man neutralizes 0.2 cubic centimeter of blood virus. The human serum had been tested before vaccination and showed no virus-neutralizing effect.

#### PROBABLE MODIFICATION OF ROCKY MOUNTAIN SPOTTED FEVER IN A VACCINATED PERSON

On April 8, 1925, E. O. E., of Stevensville, Mont., age 43, engaged in cattle dipping for the Montana State Board of Entomology, was given 1 cubic centimeter of vaccine No. 218. At the same time several other men were given injections from the same vial. Five days later E. O. E. was given another injection of 1 cubic centimeter in the opposite arm. On the morning of April 16, eight days after the first injection, he arose tired and drowsy, with a slight headache and muscular pains. The following day the symptoms were more severe, and in the evening, about 7 p. m., he had a chill and went to bed. On the 19th the family physician, Dr. W. P. Reynolds, of Stevensville, noticed small scattered hyperemic spots on the ankles and abdomen. On the 21st there was nosebleed and the temperature had reached 103.8° F. A diagnosis of Rocky Mountain spotted fever was made, although no definite history of tick bite could be obtained. The patient's occupation, however, had continually exposed him to the bites of partially fed adult ticks which he had been removing from cattle and horses by "hand picking." Such fed ticks can infect far more readily than unfed ticks. This has been previously shown by us experimentally.<sup>4</sup>

The interesting features in this case are:

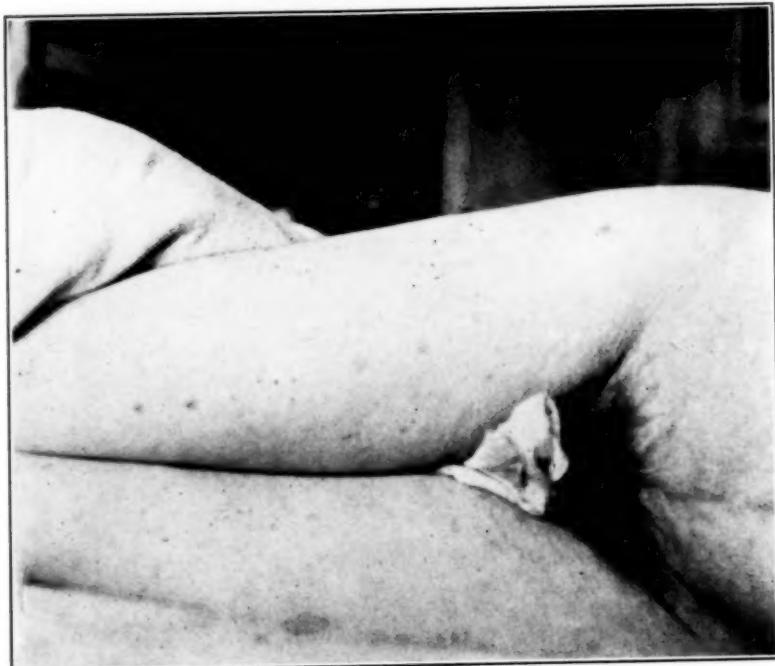
1. The course of the disease was mild, and the patient was never considered in danger.
2. Although convalescence was prolonged, the patient recovered. Four other cases—all that occurred this year in the Bitter Root Valley—were all fatal within 10 days.
3. The rash was scattered and far less marked than in any other cases we have seen in this region (see Pl. II).
4. Three guinea pigs injected with blood from the patient failed to show spotted fever. This has happened, however, in other typical cases, but never in those of a severe character.

It is, of course, impossible to state that the vaccine modified the course and severity of the infection. Vaccine No. 218 was prepared on March 18, 1925, from a tick emulsion which gave a titer of one one-thousandth tick as the M. I. D. On March 25 it protected guinea pigs in one-half cubic centimeter amounts.

<sup>4</sup> Speare, R. R., and Parker, R. R.: Rocky Mountain Spotted Fever: Infectivity of Fasting and Recently Fed Ticks. *Pub. Health Rep.*, Feb. 23, 1923, pp. 333-339. Reprint No. 817.



Fatal case of Rocky Mountain spotted fever; photograph taken about the eighth day. Many cases in the Bitterroot Valley, Montana, die before the rash has developed to this stage.—(Courtesy of Surg. L. D. Fricks)



Appearance of rash on eighth day in a case of Rocky Mountain spotted fever which was probably modified by vaccination

The time required for an immunity to develop has varied considerably in vaccinated guinea pigs. We have regarded 10 days as a minimum period. We are therefore unable to draw any definite conclusions as to the efficiency of the vaccine from this case, but believe the circumstances as reported are worthy of note.

We see no reason why injections may not be repeated each spring in persons whose occupations definitely expose them to infection. It would be impracticable to vaccinate the general population of the spotted fever region, but it is believed that the vaccine affords a means of protection for all those necessarily exposed to the infection and who choose to avail themselves of it. This would include residents and vacationists in badly infected areas, laboratory and field workers in Rocky Mountain spotted fever, foresters, lumbermen, sheep herders, surveyors, hunters, prospectors, and fishermen.

#### SUMMARY

1. The technique for the preparation of a protective vaccine against Rocky Mountain spotted fever from infected adult ticks is given.
2. The potency, keeping qualities, and duration of immunity induced by this vaccine have been estimated within certain limits.
3. The vaccine will protect guinea pigs, rabbits, and monkeys.
4. The vaccine has been administered to 34 adults with no severe reactions.
5. Virus-neutralizing substances can be demonstrated in the serum of vaccinated guinea pigs, rabbits, and man.
6. The course and outcome of a case of Rocky Mountain spotted fever developing eight days after the first dose of vaccine suggests that the infection was modified.

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#### RELATIVE VALUES OF METHODS OF ENUMERATING BACTERIA IN AIR<sup>1</sup>

By W. J. McCONNELL, Passed Assistant Surgeon (R.), United States Public Health Service, Surgeon, United States Bureau of Mines, and B. G. H. THOMAS, Junior Pathologist, United States Bureau of Mines.

Several practical and efficient instruments for collecting dusts in various atmospheres have been perfected during the past few years, and the Bureau of Mines was requested to compare some of these methods as to their efficiency in collecting bacteria in the air. Experiments were conducted with four different methods, and results were compared with the standard sand method<sup>2</sup> approved by the Committee on Standard Methods for the Examination of Air.

<sup>1</sup> Work done in cooperation with U. S. Bureau of Mines.

<sup>2</sup> Final Report of the Committee on Standard Methods for the Examination of Air. Am. Jour. Pub. Health, vol. 7, 1917, p. 54.

## Instruments Used and Operating Conditions

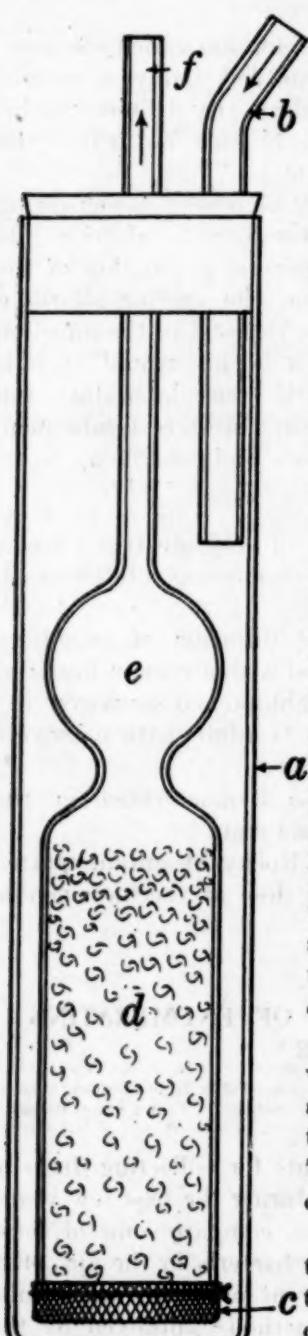


FIG. 1.—Bacterial aeroscope

The instruments tested in these experiments were the Anderson-Arnspach dust determinator,<sup>3</sup> the Greenburg-Smith impinger,<sup>4</sup> sugar tubes, and a modified water aeroscope. The aeroscope was devised by the junior writer and made by the Bureau of Mines at Pittsburgh. It consists essentially of a container and an aeroscope as illustrated in Figure 1:

In operating the instruments suction was obtained by using a rotary vane pump connected in such a manner that any amount of air could be drawn through the instrument. The amount of air passed through the filters was determined by the time and the rate of flow, a flowmeter being used between the pump and the instrument. One cubic foot per minute was the rate of flow of air used in the impinger method and 0.4 cubic foot per minute in the other methods.

All experiments were conducted under a hood. A suspension of bacteria was sprayed into the hood by means of an atomizer, which was attached to a positive pressure air line for a period of 10 seconds at the beginning of each experiment. The air in the hood was kept in motion while the samples were being taken. The organisms used were *Bacillus coli* and *Staphylococcus albus*.

The media used to grow the organisms was either beef-extract broth or beef-extract agar, containing 2.5 per cent agar, adjusted to hydrogen ion concentration of pH 7.4. The cultures were incubated at 37° C. for 3 days before they were recorded.

In order to obtain comparable results for the different methods used on any one day, they were alternated so that the average conditions would be approximately the same.

<sup>3</sup> Ingels, Margaret: New Data on Air Dust Determinations. *Jour. Am. Soc. Heat. and Vent. Engrs.*, March, 1923, February, 1924, and January, 1925.

<sup>4</sup> Greenburg, L. and Smith, G. W.: A New Instrument for Sampling Aerial Dust. *Bureau of Mines Report of Investigations*, Serial No. 2392, 922.

## DESCRIPTION OF AND PROCEDURE WITH WATER AEROSCOPE

The container *a* consists of a cylindrical glass tube 240 mm. in length and 50 mm. in diameter, closed at the bottom and fitted at the top with a rubber stopper through which two openings were made for the insertion of tubes *b* and *f*. The inner tube is also glass and consists of a lower portion *d*, which is 105 mm. in length and 30 mm. in diameter and contains water. The upper portion of the tube is constricted to a diameter of 10 mm. and expands into the trap *e*, which is 35 mm. in diameter. This in turn continues into the exit tube *f*, which is 100 mm. in length and 6 mm. in diameter. The lower end of the tube is covered with a piece of Japanese silk *c* and fastened by means of a cord to the edge of the tube. The small curves in tube *d* represent the water broken up into bubbles when the apparatus is in use. The intake tube *b* is 6 mm. in diameter and 105 mm. in length, of which the upper 35 mm. was bent at an angle of 45°.

In preparing the water aeroscope for use, approximately 25 c. c. of distilled water was put into the container *a*, and the openings *b* and *f* were plugged with cotton. It was then sterilized in an autoclave for 20 minutes at 15 to 18 pounds pressure. Before using the instrument the cotton plugs were removed and tube *f* was connected by means of rubber tubing to a suction device. The air was drawn through the inlet tube *b* and through the water in the container, which in turn was lifted into tube *d* as a foamy mass. The bacteria are caught in the bubbling water. At the end of the test 1 c. c. of the water was plated out in a petri dish and the volume of the remainder was determined. This amount, plus the 1 c. c. removed, gave the dilution factor to be used in conjunction with the volume of air filtered when calculating the number of organisms in the air.

## PROCEDURE WITH AIR DUST DETERMINATOR

When using the air dust determinator the pressure gage was disconnected and the A. D. Little quantitative filter paper was sterilized. The paper was treated in the following manner in order not to render it brittle: Each sheet was wrapped in a newspaper, autoclaved at 15 to 18 pounds pressure for 15 minutes and then dried at 37° C. dry heat. In a few preliminary experiments, five consecutively numbered sheets were used simultaneously, and these were sterilized in one package. The filter paper was handled only with sterile instruments.

Cultures were made from the central area, 2 cm. square, of each sheet. In the quantitative experiments, these squares of paper were placed in a sterile 100 c. c. Erlenmeyer flask containing 10 c. c. of distilled water. The contents of the flask were repeatedly shaken for 30 minutes in order to set the bacteria free; 1 c. c. of this water

was plated as in a water examination for bacteria. The three factors used for calculating the number of organisms were as follows: The proportional area of the exposed paper that was cultured, the dilution factor, and the volume of air filtered.

#### PROCEDURE WITH SAND AEROSCOPE

Samples of air containing bacteria were collected with the sand aeroscope, as recommended in the final report of the Committee of Standard Methods for the Examination of Air. The sand used had a fineness of 100 to 200 mesh and was sterilized at 165° C. dry heat for 60 minutes. Following the collection, the sand was poured into a small sterile Erlenmeyer flask containing 10 c. c. of distilled water. The mixture was repeatedly shaken for a period of 30 minutes, and 1 c. c. of the bacteria-laden water was cultured.

#### PROCEDURE WITH SUGAR AEROSCOPE

In a few experiments the sand was replaced by granulated sugar (saccharose). These experiments proved very unsatisfactory on account of the difficulty of sterilizing the sugar. When dry heat was used, the sugar became caramel, and with moist heat it became a solid homogenous white mass. This solid mass of sugar greatly impeded the flow of air and dissolved very slowly in distilled water from which cultures were made.

#### PROCEDURE WITH IMPINGER TUBE

The Greenburg-Smith impinger tube was next compared with the sand method. The same procedure was employed in collecting bacteria as is used in collecting dust, except that the tube was autoclaved. At the end of each test 1 c. c. of the sample was plated. The dilution factor was obtained by adding the amount used for culturing plus the volume of water remaining in the apparatus.

#### Comparative Tests

In using the dust determinator it was at first necessary to determine whether the paper would retain the organisms. Four or five sheets of filter paper numbered consecutively were used in the preliminary tests. The center square of each sheet was cultured separately in beef-broth extract. Table 1 illustrates the results of these tests.

TABLE 1.—*Results of tests of dust determinator to determine organisms retained by filter paper*

Date	Experiment No.	The individual sheet that was positive	The individual sheets that were negative
Aug. 3, 1923	F 1	Fourth	First, third, and fifth (paper No. 2 dropped).
Do	F 2	First	Second, third, fourth, and fifth.
Do	F 3	do	Do.
Sept. 8, 1923	F 4	do	Second, third, and fourth.
Do	F 5	do	Do.
Do	F 6	do	Do.
Do	F 7	do	Do.
Do	F 8		First, second, third, and fourth.

It will be observed that the first filter paper retained all the bacteria, which leads us to the conclusion that if any bacteria escapes the first filter paper they pass also through the remaining sheets.

A group of experiments was next conducted in which the methods studied were compared with the sand method. On four occasions no bacteria were sprayed into the air, and the bacterial count was practically zero. The data of the sand, filter paper, water, and impinger methods are given in Table 2, with the exception of those from the sugar tube. Of the latter group only two experiments were conducted, as it was not found to be practicable because of the hardness of the sugar after steam sterilization and the formation of caramel when dry heat was used.

TABLE 2.—*Results of various methods of collecting bacteria from air*

Jan. 24, 1924	1 F 22	0	11 F 12	0	0	IV F 1	0
	1 F 23	0	11 F 13	0	0	IV F 2	0
	1 F 24	5	11 F 14	0	0		0
Average		2	141	0	0		0
Apr. 29, 1924	1 F 25	1	86	1,066	126,000	IV F 3	0
	1 F 26	0	0	214	37,900	IV F 4	0
	1 F 27	1	86	11	2,050		0
Average		1	86	440	45,320		0
May 1, 1924	1 F 28	0	0	11 F 18	0	IV F 5	0
	1 F 29	0	0	11 F 19	0	IV F 6	0
Average		0	0	0	0	IV F 7	0
May 5, 1924	1 F 30	36	3,160	11 F 20	108	21,000	IV F 8
	1 F 31	77	6,780	11 F 21	684	78,400	IV F 9
Average		56	4,970	396	49,700		6,500
May 9, 1924	1 F 32	20	1,760	11 F 22	0	IV F 10	4,785
	1 F 33	320	26,300	11 F 23	0		3,300
Average		170	15,030	0	0	IV F 11	1,235
						IV F 12	2,200

<sup>1</sup> Too numerous to count.

It will be observed that the methods employing filter paper and water are approximately ten times more efficient than the standard sand method. The results of the impinger method indicate that it is not suitable for determining bacteria in the air. The organisms which were sprayed into the air were not recovered. On the three

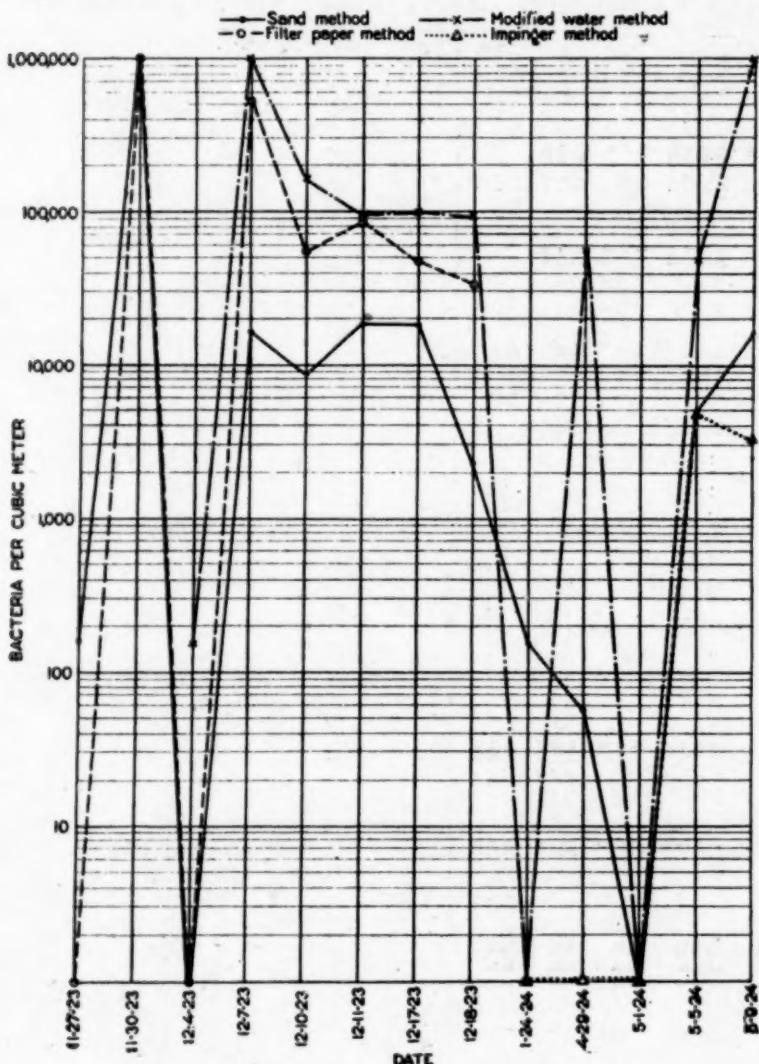


FIG. 2.—Average day's count per cubic meter for a given method

days when the impinger was used after a number of bacteria had been sprayed into the air, as shown by the water method, the plate count was either zero or not more than four. The colonies that grew on the plate were not of the organisms that were sprayed into the air.

In order to make more obvious the relative efficiency of the various methods, the average day's count for each method is plotted in Figure 2.

#### Test of Efficiency of Water Aeroscope

After completing the series of tests, a few experiments were conducted to determine, first, whether any bacteria passed through the modified water aeroscope, and second, whether the majority of organisms collected by the filter-paper method were in the center or in the periphery of the paper.

The first was determined by inserting a sterile cotton plug in the exit tube during the test, washing the cotton well in sterile water, and culturing 1 c. c. of the water. The results are given in Table 3.

TABLE 3.—*Percentage of bacteria passing through the modified water aeroscope*

Experiment No.	Total count from aeroscope	Total count from cotton plug	Per cent passed through
11 F 3	4,400	30	0.68
11 F 4	8,336	220	2.64
11 F 5	3,354	20	0.59
11 F 7	2,688	0	0.00
11 F 8	4,968	10	0.20
11 F 9	4,005	40	1.00
Average			0.85
Total	27,751	320	1.15

The number of organisms passing through the aeroscope is almost negligible. The average percentage passing through in the different experiments is 0.85 per cent, and the calculated percentage of the total count is 1.15 per cent, which is likewise negligible.

The second inquiry was determined by making a culture of both the center and the margin of the exposed filter paper. Two tests were conducted, and the results show that, in the first test, the margin contained only 85.4 per cent of the number of organisms found in the center of the paper, and in the second test, 83.8 per cent. While these two tests provide insufficient data to serve as a basis for conclusions, they indicate a possible error arising when culturing the small central area.

#### Advantages and Disadvantages of Instruments

##### FILTER PAPER

From a comparison of the results of the different methods of collecting bacteria from the air it is seen that the modified water aeroscope and the filter-paper methods are the more efficient. The latter has the advantage that, if the paper is placed in a sterile

container, it can be shipped with safety. It is probably not the most advantageous method for several reasons. First, it requires a special apparatus equipped with a filter-paper holder. Second, contamination may occur when the container is opened; when the paper is put in or removed from the machine and placed in the original container; and especially when nonsterile instruments or fingers are used in the handling of the filter paper. Third, preparation of the paper requires both moist sterilization and slow drying to prevent brittleness.

#### SAND AEROSCOPE

In contrast, the sterilization of the sand aeroscope is much simpler and can be performed in one operation. Moreover, the sand tube can be shipped by sealing the ends with a wax cap or a rubber tube and clamp. This method, however, requires grinding and sizing of the sand. Its greatest disadvantage is that it builds up a high resistance when using a rapid rate of flow.

#### MODIFIED WATER AEROSCOPE

The modified water aeroscope shares all the advantages and none of the disadvantages of the sand method. Likewise, the modified method possesses several advantages over Rettger's<sup>5</sup> water aeroscope, which he claims to be as efficient as the sand method. In Rettger's aeroscope the air is drawn in a long narrow tube instead of a short one. This is an important feature, because Rettger found that bacteria clung to the inner wall of this long narrow tube. Second, the openings in his aeroscope are few and comparatively large as compared with the modified water aeroscope. The smaller openings of this instrument assure smaller air bubbles, and thus the contents of the bubbles are more easily moistened and consequently the bacteria will be more readily caught in the water. The greater total area of openings in the modified method permits the air to be drawn through it more than 10 times as rapidly as was considered practicable in the unmodified form which permits a liter of air per minute.

#### IMPINGER

The low counts obtained with the impinger indicate the difficulty in recovering the organisms used in these experiments when the rate of suction is 1 cubic foot per minute.

In an effort to seek an explanation why the organisms were not recovered with the impinger, our attention was attracted to the experiments conducted by Larson and his colleagues<sup>6</sup> on the effect of high

<sup>5</sup> Rettger Method of Determining Bacteria in the Air, Using Salt Solution. *Jour. Med. Research*, Vol. 22, June, 1910, pp. 461-468.

<sup>6</sup> Larson, W. P., Hartzell, T. B., and Diehl, H. S.: The Effect of High Pressures on Bacteria. *Jour. of Infec. Dis.*, Vol. XXII (1918), pp. 271-279.

pressure on bacteria, and in particular his conclusion that the sudden release of the pressure, thereby changing the osmotic tension of the fluid in which the bacteria were suspended, was the factor which destroyed the organisms.

The impinger differs from the methods used by Larson in that instead of exerting a constant pressure and suddenly releasing, the suspension of organisms is impacted with a sudden increase in pressure and instantly released.

In an attempt to estimate the amount of pressure due to impact, Dr. M. D. Hersey, physicist of the Bureau of Mines, supplied the following comments on the problem:

"If the bacteria consist of soft particles of about the density of water and are caused to impinge against a metal surface at right angles to the air jet in which they are carried along in suspension, a certain amount of pressure will be developed during the moment of impact.

"A limiting case, which lends itself to calculation, may be described by assuming the metal plate to be perfectly rigid while the moving particle possesses no rigidity or resistance whatever to deformation. It will be assumed to act like a perfect liquid, free from viscosity or elasticity. In this case the impact pressure will be due solely to the inertia of the bacteria.

"Under the above conditions the formula required is

$$p = \frac{1}{2} \rho v^2$$

where  $p$  will come out in pounds per square foot if the density,  $\rho$ , is taken in slugs per cubic foot, while  $v$  is in feet per second (one slug = 32.2 pounds mass).

"Taking the density of the particle to be the same as water, about 1.9 slugs per cubic foot, and if the velocity is 370 feet per second (the air was found to leave the impinger nozzle at the rate of 373 feet per second), the formula above gives for the impact pressure about 130,000 pounds per square foot, which amounts to 900 pounds per square inch.

"In so far as the particle possesses internal rigidity or hardness, the true pressures experienced will be greater than those calculated above, approaching infinity if both the metal surface and the particle are assumed to be absolutely undefeatable.

"Probably 1,000 pounds per square inch would be a conservative estimate of the impact pressure; and for velocities greater or less than 370 feet per second, the pressure would vary in proportion to the square of the speed."

A suggested explanation that, in the short process of the experiment, enough copper was dissolved from the brass plate of the impinger to kill the organisms was easily proved untenable by success-

fully growing cultures of bacteria after having left organisms in contact with the impinger plate 24 hours. It is likewise commonly known that brass plumbing does not prevent the growth of organisms.

The most plausible explanation lies in the hypothesis that the organisms (based on Larson's experiments) were killed in the collection by the impinger.

#### TESTING THE AEROSCOPE

There are several possible methods of testing an aeroscope. It is true that it is almost impossible to obtain strictly comparable results for the different methods if they are run parallel or alternately. If, however, a number of tests are made, the error due to dissimilar conditions becomes less when an average of each group is made. Ruhle,<sup>7</sup> on the other hand, considered the proper method of testing to use the two tubes in tandem and thus determine the percentage of organisms that passed through the first tube. This method is very good provided that it is only a question of filtering and not one of enumerating the bacteria in the air. A given method may retain the organisms perfectly and yet the count may be far lower than it should be. This is due to two processes that are combined in determining the number of organisms in the air; one is catching the organisms and the other is setting them free in the media in which they are to be cultured. It is very probable that the organisms caught in the fine sand are not readily set free when the sand is poured into the water or a physiological salt solution. Thus, when a portion of the suspension is cultured, it does not give a true representative number of the organisms caught in the sand.

#### Conclusions

The experiments performed indicate that—

1. The modified water aeroscope is approximately ten times more efficient than the standard sand method. It is relatively free from error and contamination and is easily prepared.
2. The Anderson-Armsbach (filter paper) dust determinator is approximately ten times more efficient than the standard sand method, but is open to errors through contamination, and the method of preparing the filter paper is quite tedious.
3. The experiments conducted with the impinger indicate that this instrument is not suitable for enumerating the bacteria in air when the rate of flow is 1 cubic foot per minute.
4. The sugar tube is impractical as an aeroscope.

<sup>7</sup> Ruhle, G. L. A.: Methods of Bacterial Analyses o Air. *Jour. of Agricultural Research, Department of Agriculture*, Vol. 4 (1915) p. 343.

## DEATHS DURING WEEK ENDED SEPTEMBER 26, 1925

*Summary of information received by telegraph from industrial insurance companies for week ended September 26, 1925, and corresponding week of 1924. (From the Weekly Health Index, September 29, 1925, issued by the Bureau of the Census, Department of Commerce)*

	Week ended Sept. 26, 1925	Corresponding week, 1924
Policies in force.....	60,828,114	57,044,556
Number of death claims.....	10,180	9,497
Death claims per 1,000 policies in force, annual rate.....	8.7	8.7

*Deaths from all causes in certain large cities of the United States during the week ended September 26, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924. (From the Weekly Health Index, September 29, 1925, issued by the Bureau of the Census, Department of Commerce)*

City	Week ended Sept. 26, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate week ended Sept. 26, 1925 <sup>2</sup>
	Total deaths	Death rate <sup>1</sup>		Week ended Sept. 26, 1925	Corresponding week, 1924	
Total (67 cities).....	5,750	10.8	10.9	893	718	76
Akron.....	32			7	5	78
Albany <sup>3</sup> .....	42	18.3	13.6	4	4	87
Atlanta.....	75			10	7	
Baltimore <sup>4</sup> .....	185	12.1	10.8	40	25	120
Birmingham.....	53	13.4	14.3	7	8	
Boston.....	171	11.4	12.4	27	29	71
Bridgeport.....	21			4	3	64
Buffalo.....	127	12.0	14.2	23	24	93
Cambridge.....	18	8.3	14.0	2	5	34
Camden.....	27	10.9	11.6	4	5	64
Canton.....	12	5.9	6.1	2	1	42
Chicago <sup>5</sup> .....	576	10.0	10.2	95	76	84
Cincinnati.....	108	13.8	14.3	20	15	118
Cleveland.....	171	9.5	8.2	24	25	60
Columbus.....	69	12.9	13.4	17	8	156
Dallas.....	38	10.2	12.5	7	6	
Dayton.....	23	6.9	8.3	5	4	79
Denver.....	78	14.5	15.8	20	11	
Des Moines.....	25	8.7	9.0	3	2	51
Detroit.....	210			50	40	86
Duluth.....	20	9.4	7.7	4	1	86
El Paso.....	29	14.4	12.4	6	6	
Erie.....	19			5	5	97
Fall River <sup>6</sup> .....	25	10.8	12.5	3	5	43
Flint.....	23	9.2	7.1	7	4	111
Fort Worth.....	26	8.9	9.9	3	5	
Grand Rapids.....	33	11.3	9.8	5	2	79
Houston.....	36	11.4	12.1	3	7	
Indianapolis.....	74	10.8	11.6	8	11	57
Kansas City, Kans.....	27	11.4	9.0	4	1	84
Kansas City, Mo.....	85	12.1	10.4	9	12	
Los Angeles.....	181			9	17	25
Louisville.....	20	18.1	15.9	8	7	70
Lowell.....	28	12.5	14.4	8	4	139
Lynn.....	15	7.5	9.6	3	1	80
Memphis.....	65	10.4	12.7	5	3	
Milwaukee.....	80	8.3	9.5	15	12	70
Minneapolis.....	81	9.9	10.2	7	7	37
Nashville <sup>7</sup> .....	25	9.6	12.3	2	2	
New Bedford.....	24	9.3	8.3	5	5	83
New Haven.....	32	9.3	9.5	5	8	65
New Orleans.....	130	17.4	15.8	17	17	

<sup>1</sup> Annual rate per 1,000 population.

<sup>2</sup> Deaths under 1 year per 1,000 births—an annual rate based on deaths under 1 year for the week and estimated births for 1924. Cities left blank are not in the registration area for births.

<sup>3</sup> Data for 66 cities.

<sup>4</sup> Data for 62 cities.

<sup>5</sup> Deaths for week ended Friday, Sept. 25, 1925.

*Deaths from all causes in certain large cities of the United States during the week ended September 26, 1925, infant mortality, annual death rate, and comparison with corresponding week of 1924—Continued*

City	Week ended Sept. 26, 1925		Annual death rate per 1,000 corresponding week, 1924	Deaths under 1 year		Infant mortality rate week ended Sept. 26, 1925
	Total deaths	Death rate		Week ended Sept. 26, 1925	Corresponding week, 1924	
New York	1,156	9.9	9.9	166	135	67
Bronx Borough	136	7.9	7.7	20	10	69
Brooklyn Borough	363	8.5	9.0	46	55	47
Manhattan Borough	509	11.8	11.2	77	60	80
Queens Borough	100	9.1	10.0	19	7	88
Richmond Borough	48	18.7	14.8	4	3	72
Newark, N. J.	91	10.5	10.4	15	17	68
Norfolk	34			5	4	92
Oakland	39	8.0	11.2	3	1	35
Oklahoma City	36			3	3	
Omaha	51	12.6	17.0	9	7	98
Paterson	28	10.3	9.3	1	3	17
Philadelphia	395	10.4	11.0	69	54	87
Pittsburgh	160	13.2	11.8	40	16	133
Portland, Oreg.	53	9.8	10.1	4	3	40
Providence	46	9.8	11.3	4	7	32
Richmond	43	12.0	12.5	14	5	167
Rochester	59	9.3	8.7	6	6	48
St. Louis	144	9.1	11.2	16	16	
St. Paul	44	9.3	11.5	3	8	25
Salt Lake City	28	11.1	12.2	3	4	47
San Antonio	48	12.6	11.2	11	10	
San Diego	28	13.8	15.7	0	3	6
San Francisco	140	13.1	12.3	7	5	40
Schenectady	12	6.1	7.8	3	1	84
Seattle	64			3	7	29
Somerville	16	8.2	7.8	2	2	54
Spokane	24	11.5	11.5	5	2	112
Springfield, Mass.	26	8.9	11.9	3	1	45
Syracuse	38	10.3	10.8	9	3	113
Tacoma	28	14.0	7.6	1	0	23
Toledo	60	10.9	11.7	11	5	99
Trenton	31	12.2	12.5	3	6	49
Utica	35	17.0		6		129
Washington, D. C.	134	14.0	11.7	29	15	163
Waterbury	26			5	4	108
Wilmington, Del.	27	11.5	12.6	6	3	126
Worcester	45	11.8	7.5	8	3	92
Yonkers	9	4.2	5.2	0	2	0
Youngstown	33	10.8	8.7	9	7	111

\* Deaths for week ended Friday, Sept. 25, 1925.

## PREVALENCE OF DISEASE

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring*

### UNITED STATES

#### CURRENT WEEKLY STATE REPORTS

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers

#### Reports for Week Ended October 3, 1925

ALABAMA		CALIFORNIA	
	Cases		Cases
Chicken pox.....	6	Cerebrospinal meningitis:	
Dengue.....	5	Sacramento.....	1
Diphtheria.....	41	San Fernando.....	1
Influenza.....	1	Diphtheria.....	77
Malaria.....	143	Influenza.....	5
Measles.....	3	Measles.....	17
Mumps.....	14	Poliomyelitis:	
Pellagra.....	20	Berkeley.....	1
Pneumonia.....	9	Fresno.....	1
Scarlet fever.....	22	Los Angeles.....	1
Smallpox.....	1	Los Angeles County.....	2
Trachoma.....	4	Orange County.....	1
Tuberculosis.....	62	San Francisco.....	2
Typhoid fever.....	61	Stanislaus County.....	1
Whooping cough.....	24	Scarlet fever.....	54
ARIZONA		Smallpox.....	13
Diphtheria.....	2	Typhoid fever.....	16
Measles.....	2	COLORADO	
Mumps.....	1	(Exclusive of Denver)	
Tuberculosis.....	6	Chicken pox.....	10
Typhoid fever.....	7	Diphtheria.....	27
Whooping cough.....	20	Measles.....	4
ARKANSAS		Mumps.....	4
Chicken pox.....	3	Paratyphoid fever.....	1
Diphtheria.....	4	Pneumonia.....	2
Hookworm disease.....	12	Scarlet fever.....	13
Influenza.....	18	Smallpox.....	1
Malaria.....	142	Tuberculosis.....	54
Measles.....	1	Typhoid fever.....	24
Mumps.....	4	Whooping cough.....	13
Pellagra.....	11	CONNECTICUT	
Scarlet fever.....	3	Cerebrospinal meningitis.....	2
Trachoma.....	3	Chicken pox.....	2
Tuberculosis.....	21	Diphtheria.....	18
Typhoid fever.....	44	German measles.....	1
Whooping cough.....	3	Influenza.....	3

CONNECTICUT—continued		ILLINOIS—continued	
	Cases		Cases
Measles	22	Poliomyelitis—Continued	
Pneumonia (broncho)	11	Henry County	2
Pneumonia (lobar)	15	Iroquois County	1
Poliomyelitis	2	Jackson County	1
Scarlet fever	27	Livingston County	3
Septic sore throat	1	Peoria County	1
Trichinosis	2	Pike County	1
Tuberculosis (all forms)	23	St. Clair County	1
Typhoid fever	13	Winnebago County	1
Whooping cough	69	Woodford County	1
DELAWARE		Scarlet fever	109
Diphtheria	2	Smallpox:	
Mumps	1	Jackson County	3
Pneumonia	1	Scattering	1
Scarlet fever	1	Tuberculosis	261
Tuberculosis	3	Typhoid fever:	
Typhoid fever	1	Cook County	12
FLORIDA		Iroquois County	5
Chicken pox	1	Pulaski County	8
Dengue	1	Saline County	8
Diphtheria	28	Scattering	31
Malaria	8	Whooping cough	113
Pneumonia	3	INDIANA	
Tuberculosis	11	Chicken pox	6
Typhoid fever	14	Diphtheria	52
Whooping cough	1	Influenza	10
GEORGIA		Measles	8
Anchylostomiasis	2	Pneumonia	4
Cerebrospinal meningitis	1	Poliomyelitis	5
Chicken pox	7	Scarlet fever	84
Conjunctivitis (infectious)	3	Smallpox	9
Diphtheria	20	Tuberculosis	28
Dysentery	13	Typhoid fever	50
Influenza	6	Whooping cough	42
Malaria	72	IOWA	
Mumps	15	Cerebrospinal meningitis	3
Paratyphoid fever	3	Chicken pox	10
Pellagra	6	Diphtheria	52
Pneumonia	17	Measles	5
Poliomyelitis	1	Mumps	1
Scarlet fever	7	Pneumonia	1
Septic sore throat	10	Poliomyelitis	16
Smallpox	1	Scarlet fever	27
Tuberculosis	26	Smallpox	4
Typhoid fever	62	Tuberculosis	1
Typhus fever	1	Typhoid fever	11
Whooping cough	13	Whooping cough	7
ILLINOIS		KANSAS	
Diphtheria:		Cerebrospinal meningitis:	
Cook County	50	Cheney	1
Sangamon County	6	Emporia	1
Scattering	22	Scandia	1
Influenza	24	Tonganoxie	1
Lethargic encephalitis—Winnebago County	1	Chicken pox	10
Measles	35	Diphtheria	17
Pneumonia	106	Enteritis	4
Poliomyelitis:		German measles	1
Champaign County	1	Influenza	1
Cook County	4	Measles	3
Edgar County	1	Mumps	5
Fulton County	3	Pneumonia	7
Hancock County	1		

KANSAS—continued		MASSACHUSETTS	
	Cases		Cases
Poliomyelitis		Cerebrospinal meningitis	1
Arrington	1	Chicken pox	27
Corning	1	Conjunctivitis (suppurative)	10
Ellsworth	1	Diphtheria	84
Harris	1	German measles	6
Kansas City	1	Influenza	1
Marion	1	Lethargic encephalitis	2
Montrose	1	Malaria	1
Newell	1	Measles	130
Salina	1	Mumps	13
Topeka (rural)	1	Ophthalmia neonatorum	10
Wichita	2	Pneumonia (lobar)	28
Winfield	1	Poliomyelitis	7
Scarlet fever	40	Scarlet fever	94
Tetanus	1	Septic sore throat	1
Tuberculosis	71	Tetanus	1
Typhoid fever	51	Trachoma	2
Vincent's angina	1	Tuberculosis (pulmonary)	81
Whooping cough	38	Tuberculosis (other forms)	17
LOUISIANA		Typhoid fever	
Diphtheria	22	Whooping cough	150
Influenza	14	MICHIGAN	
Lethargic encephalitis	1	Diphtheria	71
Malaria	46	Measles	31
Pneumonia	50	Pneumonia	44
Scarlet fever	4	Scarlet fever	106
Smallpox	4	Tuberculosis	274
Tuberculosis	55	Typhoid fever	64
Typhoid fever	34	Whooping cough	133
MAINE		MINNESOTA	
Cerebrospinal meningitis	1	Cerebrospinal meningitis	1
Chicken pox	13	Chicken pox	18
Diphtheria	2	Diphtheria	59
Dysentery	4	Poliomyelitis	58
German measles	6	Scarlet fever	86
Measles	1	Smallpox	2
Mumps	2	Tuberculosis	161
Paratyphoid fever	1	Typhoid fever	10
Pneumonia	3	Whooping cough	10
Poliomyelitis	1	MISSISSIPPI	
Scarlet fever	10	Diphtheria	32
Tuberculosis	4	Poliomyelitis	2
Typhoid fever	27	Scarlet fever	13
Vincent's angina	1	Typhoid fever	37
Whooping cough	11	MISSOURI	
MARYLAND <sup>1</sup>		Chicken pox	6
Chicken pox	5	Diphtheria	67
Diphtheria	53	Influenza	5
Dysentery	11	Measles	3
Influenza	8	Mumps	3
Lethargic encephalitis	3	Ophthalmia neonatorum	3
Measles	11	Pneumonia	12
Meningitis (epidemic)	1	Poliomyelitis	7
Mumps	18	Scarlet fever	6
Paratyphoid fever	16	Septic sore throat	2
Pneumonia (broncho)	12	Smallpox	2
Pneumonia (lobar)	8	Trachoma	7
Poliomyelitis	1	Tuberculosis	82
Scarlet fever	32	Typhoid fever	26
Septic sore throat	2	Whooping cough	31
Tetanus	2		
Tuberculosis	53		
Typhoid fever	66		
Whooping cough	25		

<sup>1</sup> Week ended Friday.

MONTANA		OKLAHOMA	
	Cases		Cases
Chicken pox	18	(Exclusive of Tulsa and Oklahoma City)	
Diphtheria	3	Diphtheria	23
Measles	2	Influenza	10
Pneumonia	2	Malaria	52
Scarlet fever	16	Measles	1
Smallpox	2	Mumps	1
Tuberculosis	1	Pellagra	10
Typhoid fever	15	Pneumonia	3
Whooping cough	23	Poliomyelitis	3
NEW JERSEY		Scarlet fever	10
Anthrax	1	Smallpox	3
Chicken pox	9	Typhoid fever	98
Diphtheria	70	Whooping cough	11
Influenza	7	OREGON	
Malaria	3	Chicken pox	7
Measles	20	Diphtheria	10
Pneumonia	46	Influenza	4
Poliomyelitis	5	Measles	3
Scarlet fever	46	Mumps	10
Typhoid fever	33	Pneumonia	14
Whooping cough	32	Poliomyelitis	2
NEW MEXICO		Scarlet fever	24
Chicken pox	2	Smallpox	3
Conjunctivitis	4	Tuberculosis	12
Diphtheria	3	Typhoid fever	7
Mumps	5	Whooping cough	5
Pellagra	3	SOUTH DAKOTA	
Pneumonia	2	Chicken pox	2
Poliomyelitis	1	Diphtheria	8
Scarlet fever	1	Measles	1
Tuberculosis	79	Mumps	5
Typhoid fever	29	Pneumonia	1
Whooping cough	6	Poliomyelitis	3
NEW YORK		Scarlet fever	17
(Exclusive of New York City)		Tuberculosis	1
Cerebrospinal meningitis	1	Typhoid fever	6
Diphtheria	60	Whooping cough	2
Influenza	41	TEXAS	
Lethargic encephalitis	3	Chicken pox	1
Measles	48	Diphtheria	7
Pneumonia	88	Influenza	2
Poliomyelitis	35	Lethargic encephalitis	1
Scarlet fever	75	Mumps	5
Typhoid fever	47	Pellagra	2
Whooping cough	175	Poliomyelitis	2
NORTH CAROLINA		Scarlet fever	2
Chicken pox	5	Smallpox	1
Diphtheria	191	Trachoma	2
Lethargic encephalitis	1	Tuberculosis	10
Measles	1	Typhoid fever	15
Poliomyelitis	2	Typhus fever	2
Scarlet fever	43	Whooping cough	4
Septic sore throat	6	VERMONT	
Smallpox	2	Chicken pox	5
Trachoma	10	Mumps	50
Typhoid fever	21	Poliomyelitis	2
Whooping cough	60	Scarlet fever	4
* Deaths.		Whooping cough	3

October 9, 1925

WASHINGTON		WISCONSIN—continued	
	Cases		Cases
Chicken pox	30	Milwaukee—Continued.	
Diphtheria	18	Mumps	3
German measles	2	Pneumonia	10
Measles	2	Poliomyelitis	2
Mumps	11	Scarlet fever	11
Pneumonia	2	Tuberculosis	13
Poliomyelitis:		Whooping cough	40
Chelan County	1	Scattering:	
Lewis County	1	Cerebrospinal meningitis	1
Seattle	1	Chicken pox	10
Skagit County	2	Diphtheria	25
Spokane	1	German measles	2
Scarlet fever	24	Influenza	21
Smallpox	10	Lethargic encephalitis	1
Trachoma—Pierce County	1	Measles	29
Tuberculosis	46	Mumps	22
Typhoid fever	16	Pneumonia	1
Whooping cough	8	Poliomyelitis	20
WEST VIRGINIA		Scarlet fever	55
Diphtheria	4	Smallpox	2
Scarlet fever	2	Tuberculosis	11
Typhoid fever:		Typhoid fever	14
Huntington	6	Whooping cough	56
Scattering	5		
WISCONSIN		WYOMING	
Milwaukee:		Chicken pox	1
Cerebrospinal meningitis	1	Diphtheria	2
Chicken pox	20	Scarlet fever	10
Diphtheria	15	Smallpox	1
Influenza	1	Tuberculosis	1
Measles	3	Typhoid fever	2
		Whooping cough	2

## Reports for Week Ended September 26, 1925

DISTRICT OF COLUMBIA		NEBRASKA—continued	
	Cases		Cases
Diphtheria	8	Smallpox	4
Measles	3	Tetanus	1
Pneumonia	10	Typhoid fever	1
Poliomyelitis	2	Whooping cough	14
Scarlet fever	8		
Tuberculosis	22	SOUTH CAROLINA	
Typhoid fever	3	Dengue	10
Whooping cough	33	Diphtheria	61
		Influenza	39
NEBRASKA		Malaria	447
Cerebrospinal meningitis	1	Measles	8
Chicken pox	1	Poliomyelitis	6
Diphtheria	5	Scarlet fever	11
Mumps	1	Tuberculosis	45
Poliomyelitis	12	Typhoid fever	63
Scarlet fever	6	Whooping cough	47

## SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Cerebro-spinal meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Polio-myelitis	Scarlet fever	Small-pox	Typhoid fever
<i>August, 1925</i>										
Kansas	5	35	11	5	11	2	33	91	8	171
Mississippi	0	124	246	11,727	108	848	8	40	67	737
Montana	1	13			3		15	34	13	40
North Dakota	1	11	2		8		45	76	2	6
Oregon	5	62	2		5		3	30	11	48
South Carolina	221	179		1,679	5	4	1	29	15	363
South Dakota	18				7		5	84	1	31
Virginia	4	158	678	248	111	21	17	71	7	394
West Virginia	3	57	70		21		4	84	30	294
Wyoming	6	3			2		5	23	1	9

## RECIPROCAL NOTIFICATIONS, JUNE, 1925

Notifications regarding communicable diseases sent during the month of August, 1925, to other State health departments by departments of health of certain States

Referred by—	Diphtheria	Malaria	Measles	Paratyphoid	Polio-myelitis	Scarlet fever	Small-pox	Tetanus	Tuberculosis	Typhoid
Connecticut				1	1	1				4
Illinois		2					2		12	9
Massachusetts										2
Minnesota	1				1	1		1	35	2
New Jersey			1	1	9	3				2
New York	2				3					6
Rhode Island								1		

## PLAQUE-ERADICATIVE MEASURES IN THE UNITED STATES

The following items were taken from the reports of plague-eradicative measures from the cities named:

## Los Angeles, Calif.

Week ended Sept. 19, 1925:

Number of rats trapped	2,497
Number of rats found plague infected	0
Number of squirrels examined	832
Number of squirrels found plague infected	0
Number of mice trapped	3,538
Number of mice found plague infected	0

Date of discovery of last plague-infected rodent, Aug. 22, 1925.

Date of last human case, Jan. 15, 1925.

## Oakland, Calif.

(Including other East Bay communities)

Week ended Sept. 12, 1925:

Number of rats trapped	663
Number of rats found plague infected	0

October 9, 1925

**Totals:**

Number of rats trapped Jan. 1, to Sept. 12, 1925-----	67,771
Number of rats found plague infected-----	21
Number of squirrels examined May 1 to Aug. 1, 1925-----	7,277
Number of squirrels found plague infected-----	0

**Week ended Sept. 19, 1925:**

Number of rats trapped-----	732
Number of rats found plague infected-----	0

**Totals:**

Number of rats trapped Jan. 1 to Sept. 19, 1925-----	68,503
Number of rats found plague infected-----	21

Date of discovery of last plague-infected rat, Mar. 4, 1925.

Date of last human case, Sept. 10, 1919.

*New Orleans, La.*

**Week ended Sept. 19, 1925:**

Number of vessels inspected-----	29
Number of inspections made-----	39
Number of vessels fumigated with cyanide gas-----	13
Number of rodents examined for plague-----	2,671
Number of rodents found plague infected-----	0

**Totals, Dec. 5, 1924, to Sept. 19, 1925:**

Number of rodents examined for plague-----	171,031
Number of rodents found plague infected-----	12

Date of discovery of last plague-infected rat, Jan. 17, 1925.

Date of last human case occurring in New Orleans, Aug. 20, 1920.

**GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES**

**Diphtheria.**—For the week ended September 19, 1925, 37 States reported 1,050 cases of diphtheria. For the week ended September 20, 1924, the same States reported 1,359 cases of this disease. One hundred cities, situated in all parts of the country and having an aggregate population of more than 28,800,000, reported 535 cases of diphtheria for the week ended September 19, 1925. Last year for the corresponding week they reported 638 cases. The estimated expectancy for these cities was 715 cases. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

**Measles.**—Thirty-four States reported 274 cases of measles for the week ended September 19, 1925, and 297 cases of this disease for the week ended September 20, 1924. One hundred cities reported 162 cases of measles for the week this year, and 90 cases last year.

**Poliomyelitis.**—The health officers of 38 States reported 276 cases of poliomyelitis for the week ended September 19, 1925. The same States reported 278 cases for the week ended September 20, 1924.

**Scarlet fever.**—Scarlet fever was reported for the week as follows: Thirty-seven States—this year, 827 cases; last year, 1,119 cases; 100 cities—this year, 342 cases; last year, 462 cases; estimated expectancy, 354 cases.

**Smallpox.**—For the week ended September 19, 1925, 37 States reported 117 cases of smallpox. Last year for the corresponding week

they reported 188 cases. One hundred cities reported smallpox for the week as follows: 1925, 36 cases; 1924, 86 cases; estimated expectancy, 19 cases. One death from smallpox was reported during the week at Los Angeles, Calif.

*Typhoid fever.*—One thousand and fifty cases of typhoid fever were reported for the week ended September 19, 1925, by 36 States. For the corresponding week of 1924 the same States reported 815 cases of this disease. One hundred cities reported 279 cases of typhoid fever for the week this year and 197 cases for the corresponding week last year. The estimated expectancy for these cities was 249 cases.

*Influenza and pneumonia.*—Deaths from influenza and pneumonia were reported for the week by 100 cities as follows: 1925, 357 deaths; 1924, 309 deaths.

*City reports for week ended September 19, 1925*

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence how many cases of the disease under consideration may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding week of the preceding years. When the reports include several epidemics or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during nonepidemic years.

If reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1915 is included. In obtaining the estimated expectancy the figures are smoothed when necessary to avoid abrupt deviations from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1923, estimated	Chick-en pox, cases reported	Diphtheria		Influenza		Meas- sles, cases reported	Mumps, cases reported	Pneu- monia, deaths reported
			Cases, esti- mated expectancy	Cases re- ported	Cases re- ported	Deaths re- ported			
<b>NEW ENGLAND</b>									
Maine:									
Portland	73,129	0	1	0	0	0	1	1	2
New Hampshire:									
Concord	22,408	0	0	1	0	0	0	0	0
Manchester	81,383	0	3	0	0	0	0	0	0
Vermont:									
Barre	10,008	0	0	0	0	0	0	0	0
Burlington	23,613	0	1	1	0	0	0	1	0
Massachusetts:									
Boston	770,400	8	33	15	0	0	4	1	16
Fall River	120,912	1	3	5	0	0	12	0	1
Springfield	144,227	1	2	0	0	0	0	0	1
Worcester	191,927	2	4	29	0	0	27	0	4
Rhode Island:									
Pawtucket	68,700	0	1	1	0	0	0	0	2
Providence	242,378	4	7	1	0	0	0	0	2
Connecticut:									
Bridgeport	143,555	0	5	4	0	0	1	0	0
Hartford	138,036	0	4	1	0	0	0	0	0
New Haven	172,967	0	3	1	0	0	0	0	0
<b>MIDDLE ATLANTIC</b>									
New York:									
Buffalo	536,718	0	16	3	0	1	2	0	8
New York	5,927,625	17	98	75	7	8	26	4	78
Rochester	317,867	1	3	2	0	0	4	0	4
Syracuse	184,511	0	5	0	0	0	0	3	0
New Jersey:									
Camden	124,157	0	3	3	0	0	0	0	0
Newark	438,699	4	8	10	1	1	3	1	4
Trenton	127,390	0	4	0	0	0	1	0	2

<sup>1</sup> Population Jan. 1, 1920.

## City reports for week ended September 19, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chick-en pox, cases reported	Diphtheria		Influenza		Meas-les, cases reported	Mumps, cases reported	Pneu-monia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
<b>MIDDLE ATLANTIC—CON.</b>									
Pennsylvania:									
Philadelphia.....	1,922,788	7	32	47	0	2	23	0	26
Pittsburgh.....	613,442	0	19	21	0	0	6	0	0
Reading.....	110,917	0	2	3	0	0	2	0	0
Scranton.....	140,636	0	3	6	0	0	1	0	0
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cincinnati.....	406,312	2	8	3	0	1	0	0	4
Cleveland.....	888,519	4	28	26	1	0	11	2	7
Columbus.....	261,082	0	4	1	0	0	0	0	2
Toledo.....	268,338	0	9	3	0	0	1	0	2
Indiana:									
Fort Wayne.....	93,573	0	2	1	0	0	0	0	0
Indianapolis.....	342,718	0	15	2	0	0	5	0	1
South Bend.....	76,709	0	1	3	0	0	0	0	0
Terre Haute.....	68,939	0	1	2	0	0	0	0	0
Illinois:									
Chicago.....	2,886,121	12	84	45	6	2	10	2	26
Springfield.....	61,833	3	1	1	0	0	0	2	1
Michigan:									
Detroit.....	905,668	2	43	13	3	3	0	1	16
Flint.....	117,968	0	6	0	0	0	0	0	0
Grand Rapids.....	145,947	0	3	0	0	0	0	0	0
Wisconsin:									
Madison.....	42,519	0	0	0	0	0	6	0	0
Milwaukee.....	484,595	7	12	9	0	0	0	2	5
Racine.....	64,303	0	1	2	0	0	0	0	0
Superior.....	139,671	0	1	1	0	0	0	0	1
<b>WEST NORTH CENTRAL</b>									
Minnesota:									
Duluth.....	106,289	3	2	1	0	0	0	0	1
Minneapolis.....	409,125	5	19	36	0	2	1	4	4
St. Paul.....	241,891	2	13	11	0	0	0	0	6
Iowa:									
Davenport.....	61,262	0	1	0	0	0	0	0	0
Sioux City.....	79,662	0	1	0	0	0	0	0	0
Waterloo.....	39,667	0	0	1	0	0	0	0	0
Missouri:									
Kansas City.....	351,819	0	7	2	1	1	1	1	5
St. Joseph.....	78,232	0	2	1	0	0	0	0	0
St. Louis.....	803,853	0	27	13	0	0	2	0	0
North Dakota:									
Fargo.....	24,841	0	1	0	0	0	0	4	0
Grand Forks.....	14,547	0	0	0	0	0	0	0	0
South Dakota:									
Aberdeen.....	15,829	0	0	0	0	0	0	0	0
Sioux Falls.....	29,206	1	1	1	0	0	1	1	0
Nebraska:									
Lincoln.....	58,761	0	1	1	0	0	0	1	2
Omaha.....	204,382	0	12	3	0	0	0	0	3
Kansas:									
Topeka.....	52,555	0	1	1	0	0	0	0	2
Wichita.....	79,261	0	2	2	0	0	0	0	0
<b>SOUTH ATLANTIC</b>									
Delaware:									
Wilmington.....	117,728	0	1	1	0	0	0	0	0
Maryland:									
Baltimore.....	773,580	4	15	7	1	0	7	6	12
Cumberland.....	32,361	0	1	3	2	1	0	0	1
Frederick.....	11,301	1	0	0	0	0	0	0	0
District of Columbia:									
Washington.....	1,437,571	1	6	4	0	0	1	0	11
Virginia:									
Lynchburg.....	30,277	0	0	1	0	0	0	0	0
Norfolk.....	159,069	1	2	0	0	0	0	0	2
Richmond.....	181,044	0	12	14	0	0	0	0	2
Roanoke.....	55,502	0	3	3	0	0	0	0	0
West Virginia:									
Charleston.....	45,597	0	2	3	0	0	0	0	0
Huntington.....	57,918	0	3	0	0	0	0	0	1
Wheeling.....	156,208	0	2	2	0	0	0	0	1

<sup>1</sup> Population Jan. 1, 1920.

## City reports for week ended September 19, 1925—Continued

Division, State, and city	Population July 1, 1923, estimated	Chick-en pox, cases reported	Diphtheria		Influenza		Meas-les, cases re-por-ted	Mumps, cases re-por-ted	Pneu-moni- deaths re-por-ted
			Cases, es-ti-mated ex-pec-tancy	Cases re-por-ted	Cases re-por-ted	Deaths re-por-ted			
<b>SOUTH ATLANTIC—CON.</b>									
North Carolina:									
Raleigh	29,171	0	3	1	0	0	0	0	0
Wilmington	35,719	0	2	0	0	0	0	1	0
Winston-Salem	56,230	0	3	0	0	0	0	0	0
South Carolina:									
Charleston	71,245	0	1	0	0	0	0	0	2
Columbia	39,638	0	1	0	0	0	0	0	0
Greenville	25,789	0	1	3	0	0	0	0	0
Georgia:									
Atlanta	222,963	0	6	4	7	0	0	3	6
Brunswick	15,937	0	0	0	0	0	0	0	0
Savannah	89,448	0	1	0	1	0	0	0	2
Florida:									
St. Petersburg	24,403	0	0	0	0	0	0	0	7
Tampa	56,050	0	1	0	0	0	0	0	2
<b>EAST SOUTH CENTRAL</b>									
Kentucky:									
Covington	57,877	0	1	0	0	1	0	0	0
Louisville	257,671	0	6	1	2	0	0	0	4
Tennessee:									
Memphis	170,067	0	7	2	0	0	0	0	4
Nashville	121,128	0	3	3	0	0	0	0	1
Alabama:									
Birmingham	195,901	0	5	5	1	0	0	0	6
Mobile	63,858	0	2	1	0	0	0	0	0
Montgomery	45,383	0	1	2	0	0	1	3	0
<b>WEST SOUTH CENTRAL</b>									
Arkansas:									
Fort Smith	30,635	0	1	0	0	0	0	0	0
Little Rock	70,915	0	1	0	0	0	0	0	1
Louisiana:									
New Orleans	404,575	0	7	1	2	2	0	0	6
Shreveport	54,590	1	1	0	0	0	0	0	0
Oklahoma:									
Oklahoma	161,150	0	1	1	2	0	0	0	2
Tulsa	102,018	0	1	1	0	0	1	0	0
Texas:									
Dallas	177,274	0	4	6	0	0	1	0	4
Galveston	46,877	0	0	0	0	0	0	0	0
Houston	154,970	0	2	4	0	0	0	0	1
San Antonio	184,727	0	0	2	0	0	0	0	4
<b>MOUNTAIN</b>									
Montana:									
Billings	16,927	0	0	0	0	0	0	1	0
Great Falls	27,787	2	0	1	0	0	0	2	0
Helena	112,037	0	0	0	0	0	0	0	0
Missoula	112,668	0	0	0	0	0	0	0	1
Idaho:									
Boise	22,806	0	0	0	0	0	1	0	0
Colorado:									
Denver	272,031	4	9	9	0	2	0	1	8
Pueblo	43,519	0	3	10	0	0	0	0	1
Arizona:									
Phoenix	33,899	0	0	2	0	0	0	0	0
Utah:									
Salt Lake City	126,241	2	2	3	0	0	0	5	2
Nevada:									
Reno	12,429	0	0	0	0	0	0	0	0
<b>PACIFIC</b>									
Washington:									
Seattle	1,315,685	6	4	9	0	0	1	3	0
Spokane	104,573	1	2	0	0	0	0	0	3
Tacoma	101,731	1	2	6	0	0	0	0	0
Oregon:									
Portland	273,621	2	4	5	0	0	0	2	3
California:									
Los Angeles	666,853	3	25	19	1	0	1	7	9
Sacramento	69,950	0	1	0	0	0	2	0	1
San Francisco	539,038	17	14	13	1	0	1	6	4

<sup>1</sup> Population Jan. 1, 1920.

## City reports for week ended September 19, 1925—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber-cu-losis, deaths re-ported	Typhoid fever			Whoop-ing cough, cases re-ported	Deaths, all causes
	Cases, es-ti-mated ex-pectancy	Cases re-ported	Cases, es-ti-mated ex-pectancy	Cases re-ported	Deaths re-ported		Cases, es-ti-mated ex-pectancy	Cases re-ported	Deaths re-ported		
<b>NEW ENGLAND</b>											
Maine:											
Portland	1	1	0	0	0	2	2	0	2	22	
New Hampshire:											
Concord	0	3	0	0	0	0	0	0	0	4	
Manchester	1	3	0	0	0	0	0	0	0	10	
Vermont:											
Barre	1	0	0	0	0	0	0	0	0	4	
Burlington	2	0	0	0	0	0	0	0	0	5	
Massachusetts:											
Boston	12	7	0	0	0	9	4	3	0	37	163
Fall River	1	0	0	0	0	2	3	1	0	7	24
Springfield	2	1	0	0	0	1	0	1	0	5	25
Worcester	3	5	0	0	0	0	1	0	0	14	36
Rhode Island:											
Pawtucket	0	1	0	0	0	0	1	0	0	0	13
Providence	3	2	0	0	0	5	2	1	1	2	50
Connecticut:											
Bridgeport	1	1	0	0	0	0	1	2	0	3	18
Hartford	2	4	0	0	0	1	2	1	1	4	31
New Haven	2	0	0	0	0	0	4	1	0	19	16
<b>MIDDLE ATLANTIC</b>											
New York:											
Buffalo	7	5	0	0	0	4	3	1	0	6	126
New York	34	22	0	0	0	75	47	40	3	50	1,104
Rochester	3	2	0	0	0	2	2	1	0	8	72
Syracuse	4	1	0	0	0	0	2	1	0	39	35
New Jersey:											
Camden	1	2	0	0	0	0	1	1	0	4	16
Newark	4	7	0	0	0	1	2	3	0	22	59
Trenton	0	0	0	0	0	5	1	1	0	0	27
Pennsylvania:											
Philadelphia	17	28	0	0	0	35	15	13	0	73	442
Pittsburgh	12	21	0	0	0	3	5	8	0	0	—
Reading	1	4	0	0	0	0	3	1	0	13	25
Scranton	1	1	0	0	0	0	1	0	0	0	—
<b>EAST NORTH CENTRAL</b>											
Ohio:											
Cincinnati	6	3	0	0	0	8	2	0	1	3	100
Cleveland	11	8	0	0	0	16	5	5	1	55	176
Columbus	4	3	0	1	0	4	1	1	0	4	70
Toledo	5	1	0	0	0	2	3	8	0	3	64
Indiana:											
Fort Wayne	1	1	0	0	0	1	1	4	0	0	14
Indianapolis	4	4	1	0	0	6	3	0	0	9	87
South Bend	2	0	1	0	0	0	1	0	0	3	14
Terre Haute	1	0	0	0	0	1	0	0	1	0	14
Illinois:											
Chicago	44	25	1	1	0	36	9	14	2	55	527
Springfield	1	0	0	0	0	0	1	1	0	0	11
Michigan:											
Detroit	30	23	2	0	0	23	5	1	1	66	269
Flint	4	4	0	1	0	1	1	0	0	24	15
Grand Rapids	3	6	1	0	0	2	1	0	0	0	29
Wisconsin:											
Madison	0	3	0	0	0	0	0	0	0	1	6
Milwaukee	14	1	1	0	0	3	0	0	0	72	—
Racine	2	0	0	0	0	0	1	0	0	5	8
Superior	1	2	1	0	0	0	0	0	0	0	5
<b>WEST NORTH CENTRAL</b>											
Minnesota:											
Duluth	3	18	0	0	0	2	1	0	0	2	25
Minneapolis	10	13	0	0	0	0	1	8	0	2	71
St. Paul	5	10	1	0	0	4	2	3	1	14	60

1 Pulmonary tuberculosis only.

## City reports for week ended September 19, 1925—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber-cu-losis, deaths re-reported	Typhoid fever			Whoop-ing cough, cases re-reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
<b>WEST NORTH CENTRAL—CON.</b>											
Iowa:											
Davenport	0	0	0	0		1	0			0	
Sioux City	1	0	0	0		0	2			0	
Waterloo	1	0	0	0		0	0			0	
Missouri:											
Kansas City	3	3	0	0	6	3	2	0	12	92	
St. Joseph	1	0	0	0		0	0		0		
St. Louis	13	14	0	0	10	7	10	3	6	173	
North Dakota:											
Fargo	1	5	0	1	0	0	0	0	4	5	
Grand Forks	1	0	0	0		0	0		4		
South Dakota:											
Aberdeen	1	2	0	0		1	0	0	0		
Sioux Falls	1	8	0	1	0	0	0	0	0	6	
Nebraska:											
Lincoln	1	0	0	0	0	0	0	0	6	12	
Omaha	2	2	1	0	5	2	0	0	6	46	
Kansas:											
Topeka	2	0	0	0	3	2	1	0	14	42	
Wichita	1	0	0	0	0	2	2	0	2	25	
<b>SOUTH ATLANTIC</b>											
Delaware:											
Wilmington	1	0	0	0	2	1	2	0	0	22	
Maryland:											
Baltimore	6	1	0		14	12	13	1	54	198	
Cumberland	0	1	0	0	1	1	1	0	0	10	
Frederick	0	0	0	0	0	0	0	0	0	5	
District of Columbia:											
Washington	5	6	0	0	11	5	7	2	18	126	
Virginia:											
Lynchburg	0	2	0	0	0	1	3	0	0	9	
Norfolk	1	0	0	0	1	1	3	0	1		
Richmond	4	4	0	0	4	2	2	0	0	7	
Roanoke	0	1	0	0	0	2	1	0	0	16	
West Virginia:											
Charleston	1	0	0	0	1	2	5	1	2	14	
Huntington	1	0	0	0	1	1	2	0	0	14	
Wheeling	1	2	0	0	0	2	4	0	0	20	
North Carolina:											
Raleigh	0	0	0	0	0	1	0	0	0	11	
Wilmington	0	0	0	0	0	1	0	1	0	8	
Winston-Salem	1	2	1	6	4	2	0	0	0	7	
South Carolina:											
Charleston	0	0	0	0	4	2	2	0	0	23	
Columbia	0	0	0	0	1	0	0	1	0	1	
Greenville	1	0	0	0	0	0	2	0	1	2	
Georgia:											
Atlanta	5	0	0	0	4	3	9	1	2	66	
Brunswick	0	0	0	0	0	0	0	0	0	2	
Savannah	0	0	1	0	3	1	0	1	0	29	
Florida:											
St. Petersburg	0	0	0	0	0	0	0	1	0	7	
Tampa	0	0	1	0	1	0	1	1	0	23	
<b>EAST SOUTH CENTRAL</b>											
Kentucky:											
Covington	0	0	0	0	0	1	0	0	0		
Louisville	2	1	0	0	0	2	5	1	1	2	55
Tennessee:											
Memphis	1	1	0	0	0	5	5	10	2	7	67
Nashville	2	1	0	2	0	1	5	11	2	0	65
Alabama:											
Birmingham	4	6	0	5	0	3	6	1	2	1	50
Mobile	0	0	0	0	0	0	0	1	0	22	
Montgomery	0	1	0	0	0	1	1	1	0	0	20

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## City reports for week ended September 19, 1925—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuber-cu-losis, deaths re-reported	Typhoid fever			Whoop-ing cough, cases re-reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
<b>WEST SOUTH CENTRAL</b>											
Arkansas:											
Fort Smith	1	1	0	0		0	1	1	0		
Little Rock	1	0	0	0	0	2	8	1	0		
Louisiana:											
New Orleans	1	4	0	0	0	17	5	18	1	1	137
Shreveport	0	1	1	0	0	1	1	2	0	0	24
Oklahoma:											
Oklahoma	1	0	0	0	0	0	3	4	0	0	19
Tulsa	2	1	1	0		2	3		1		
Texas:											
Dallas	1	2	1	0	0	0	2	3	1	13	39
Galveston	0	0	0	0	0	0	0	2	0	0	8
Houston	0	1	0	1	0	2	1	0	0		32
San Antonio	0	0	0	0	0	0	0	2	1	0	54
<b>MOUNTAIN</b>											
Montana:											
Billings	1	0	0	0	0	0	0	0	0	0	4
Great Falls	1	4	0	0	0	0	1	0	0	7	5
Helena	0	0	0			0					
Missoula	0	0	0	0	0	0	0	2	0	0	6
Idaho:											
Boise	0	0	0	0	0	1	0	0	0	0	5
Colorado:											
Denver	3	9	1	0	0	10	6	2	0	18	77
Pueblo	1	0	0	0	0	0	1	1	1		11
Arizona:											
Phoenix	2			0	0	4		0	0	0	14
Utah:											
Salt Lake City	1	4	0	0	0	0	2	4	0	8	27
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	0	5
<b>PACIFIC</b>											
Washington:											
Seattle	5	8	1	1			2	4		7	
Spokane	4	3	1	4			1	0		5	
Tacoma	2	0	1	1	0	0	1	1	0	0	19
Oregon:											
Portland	3	3	2	0	0	0	2	2	1	1	58
California:											
Los Angeles	7	8	0	10	1	25	5	1	0	15	197
Sacramento	1	1	0	0	0	2	1	0	0	0	19
San Francisco	6	3	1	1	0	10	2	4	0	11	129

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
<b>NEW ENGLAND</b>									
<b>Massachusetts:</b>									
Boston	0	0	1	0	0	0	2	3	0
<b>MIDDLE ATLANTIC</b>									
<b>New York:</b>									
Buffalo	0	0	0	0	0	0	1	16	1
New York City	4	3	4	1	0	0	12	16	6
Rochester	0	0	0	0	0	0	0	3	1
Syracuse	0	0	0	0	1	1	1	1	0
<b>Pennsylvania:</b>									
Philadelphia	1	0	0	0	1	0	1	3	1
Pittsburgh	0	0	0	0	0	0	5	0	0

## City reports for week ended September 19, 1925—Continued

Division, State, and city	Cerebrospinal meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		H
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
<b>EAST NORTH CENTRAL</b>									
Ohio:									
Cleveland.....	3	2	0	0	0	0	1	6	3
Illinois:									
Chicago.....	0	0	3	2	0	0	5	5	0
Michigan:									
Detroit.....	0	0	0	1	0	0	1	1	0
Wisconsin:									
Milwaukee.....	0	0	1	0	0	0	0	1	0
Racine.....	0	0	0	0	0	0	0	0	1
<b>WEST NORTH CENTRAL</b>									
Minnesota:									
Duluth.....	0	0	0	0	0	0	0	1	0
Minneapolis.....	0	0	0	0	0	0	1	4	0
St. Paul.....	0	0	0	0	0	0	1	4	0
Missouri:									
Kansas City.....	0	0	0	0	0	0	0	2	0
St. Joseph.....	0	0	0	0	0	0	0	1	0
St. Louis.....	0	0	0	0	0	0	1	1	0
Nebraska:									
Omaha.....	0	0	0	0	0	0	0	9	2
Kansas:									
Topeka.....	0	0	1	0	0	0	0	0	0
Wichita.....	0	0	0	0	0	0	0	2	0
<b>SOUTH ATLANTIC</b>									
Maryland:									
Baltimore.....	1	0	1	0	0	0	2	1	0
North Carolina:									
Raleigh.....	0	0	0	0	0	1	0	0	0
South Carolina:									
Charleston.....	0	0	0	0	0	1	0	0	0
<b>EAST SOUTH CENTRAL</b>									
Alabama:									
Birmingham.....	0	0	0	0	0	0	0	1	1
Mobile.....	0	0	0	0	0	1	0	0	0
Montgomery.....	0	0	0	0	2	0	0	0	0
<b>WEST SOUTH CENTRAL</b>									
Arkansas:									
Fort Smith.....	0	0	0	0	0	0	0	1	0
Little Rock.....	0	0	0	0	1	0	0	0	0
Louisiana:									
New Orleans.....	0	0	0	0	2	1	1	0	0
Shreveport.....	0	0	0	0	0	4	0	0	0
<b>MOUNTAIN</b>									
Colorado:									
Denver.....	0	0	0	0	0	0	0	1	0
<b>PACIFIC</b>									
Washington:									
Seattle.....	0	0	0	0	0	0	0	2	0
Spokane.....	0	0	0	0	0	0	0	1	0
Oregon:									
Portland.....	1	0	0	0	0	0	1	0	0
California:									
Los Angeles.....	0	0	0	1	0	0	3	0	0
Sacramento.....	0	0	0	0	0	1	0	0	0
San Francisco.....	0	0	2	2	0	1	0	2	0

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The following table gives the rates per hundred thousand population for 104 cities for the 10-week period ended September 19, 1925. The population figures used in computing the rates were estimated as of July 1, 1923, as this is the latest date for which estimates are available. The 104 cities reporting cases had an estimated aggregate population of nearly 29,000,000, and the 96 cities reporting deaths had more than 28,000,000 population. The number of cities included in each group and the aggregate populations are shown in a separate table below.

*Summary of weekly reports from cities, July 12 to September 19, 1925—Annual rates per 100,000 population<sup>1</sup>*

DIPHTHERIA CASE RATES

	Week ended—									
	July 18	July 25	Aug. 1	Aug. 8	Aug. 15	Aug. 22	Aug. 29	Sept. 5	Sept. 12	Sept. 19
104 cities	79	78	<sup>2</sup> 78	<sup>3</sup> 87	80	70	<sup>4</sup> 75	<sup>5</sup> 72	<sup>6</sup> 95	<sup>7</sup> 99
New England	62	62	62	82	92	52	42	45	77	144
Middle Atlantic	97	91	92	83	78	73	63	62	89	<sup>7</sup> 81
East North Central	73	68	74	101	72	55	72	61	75	81
West North Central	85	106	100	107	113	102	118	102	<sup>6</sup> 148	149
South Atlantic	26	45	<sup>2</sup> 50	55	73	63	<sup>4</sup> 72	112	127	94
East South Central	11	11	11	29	34	63	40	34	80	80
West South Central	28	70	46	23	51	60	97	32	125	60
Mountain	124	115	153	<sup>3</sup> 68	162	76	172	315	200	224
Pacific	99	104	67	148	84	104	110	<sup>5</sup> 80	78	136

MEASLES CASE RATES

104 cities	159	105	<sup>2</sup> 73	<sup>3</sup> 53	48	31	<sup>4</sup> 28	<sup>5</sup> 22	<sup>6</sup> 23	<sup>7</sup> 30
New England	261	216	186	132	129	97	89	52	94	112
Middle Atlantic	199	128	77	69	57	38	34	23	25	<sup>7</sup> 34
East North Central	191	119	72	47	37	19	22	21	17	24
West North Central	29	19	29	11	30	6	4	6	<sup>4</sup> 4	10
South Atlantic	148	95	<sup>2</sup> 71	45	43	35	<sup>4</sup> 25	24	23	16
East South Central	80	63	29	11	17	6	11	0	0	6
West South Central	0	5	0	0	9	9	0	0	5	5
Mountain	29	38	105	<sup>3</sup> 20	19	29	29	0	10	10
Pacific	64	20	35	29	20	12	6	<sup>5</sup> 28	9	15

SCARLET FEVER CASE RATES

104 cities	61	57	<sup>2</sup> 56	<sup>3</sup> 53	59	53	<sup>4</sup> 46	<sup>5</sup> 56	<sup>6</sup> 53	<sup>7</sup> 63
New England	80	72	75	102	84	92	70	47	65	62
Middle Atlantic	45	43	37	33	36	23	27	30	31	<sup>7</sup> 45
East North Central	67	67	64	<sup>3</sup> 52	58	58	48	62	61	62
West North Central	108	122	124	120	137	147	112	125	<sup>6</sup> 114	151
South Atlantic	47	16	<sup>2</sup> 35	22	41	43	<sup>4</sup> 41	59	57	39
East South Central	80	29	63	63	40	34	29	143	120	57
West South Central	23	32	31	56	70	51	19	37	32	42
Mountain	86	162	86	<sup>3</sup> 39	95	67	29	76	29	166
Pacific	61	46	49	64	87	44	70	<sup>5</sup> 52	38	67

<sup>1</sup> The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1923.

<sup>2</sup> Tampa, Fla., not included. Report not received at time of going to press.

<sup>3</sup> Helena, Mont., not included.

<sup>4</sup> Greenville, S. C., not included.

<sup>5</sup> Spokane, Wash., not included.

<sup>6</sup> Topeka, Kans., not included.

<sup>7</sup> Newark, N. J., not included.

## Summary of weekly reports from cities, July 12 to September 19, 1925—Annual rates per 100,000 population—Continued

## SMALLPOX CASE RATES

	Week ended—									
	July 18	July 25	Aug. 1	Aug. 8	Aug. 15	Aug. 22	Aug. 29	Sept. 5	Sept. 12	Sept. 19
104 cities.....	15	10	2 10	2 9	7	6	4 8	4 5	4 6	7 7
New England.....	2	5	0	0	0	0	0	0	0	0
Middle Atlantic.....	1	0	0	0	0	0	1	0	0	0
East North Central.....	10	8	4	6	3	2	8	5	2	2
West North Central.....	17	12	15	9	11	6	4	4	4	4
South Atlantic.....	8	16	2	2	2	4	4 12	2	12	12
East South Central.....	46	40	23	51	23	40	57	11	23	40
West South Central.....	14	5	5	14	9	5	14	5	5	5
Mountain.....	19	0	57	20	10	10	10	10	19	0
Pacific.....	119	67	84	67	67	44	29	40	44	49

## TYPHOID FEVER CASE RATES

104 cities.....	38	34	2 41	2 41	48	57	4 47	4 40	4 42	7 51
New England.....	32	22	22	27	40	32	27	30	35	30
Middle Atlantic.....	25	21	30	23	33	45	30	29	27	7 35
East North Central.....	12	8	10	21	19	31	28	19	22	19
West North Central.....	44	39	48	43	58	48	35	21	61	58
South Atlantic.....	55	53	66	59	91	110	94	61	51	110
East South Central.....	223	177	183	274	217	183	177	183	246	212
West South Central.....	134	172	178	130	102	134	111	176	74	167
Mountain.....	19	48	57	107	105	105	115	29	115	88
Pacific.....	32	29	46	17	44	64	55	31	29	29

## INFLUENZA DEATH RATES

96 cities.....	2	2	2 1	2 3	2	2	2 4	3	2 4	7 5
New England.....	0	0	0	5	0	0	0	0	2	0
Middle Atlantic.....	2	3	1	2	2	2	3	3	3	7 5
East North Central.....	3	1	0	3	3	1	4	3	7	4
West North Central.....	0	4	0	0	0	0	2	2	0	7
South Atlantic.....	4	4	2	6	0	0	2	2	0	2
East South Central.....	0	5	0	6	6	11	6	0	6	6
West South Central.....	10	0	0	5	0	10	15	5	5	10
Mountain.....	0	10	0	0	10	10	10	19	29	20
Pacific.....	4	0	0	0	0	8	0	0	4	0

## PNEUMONIA DEATH RATES

96 cities.....	57	50	2 61	2 56	63	55	2 64	73	2 63	7 63
New England.....	50	52	55	37	30	40	42	55	52	70
Middle Atlantic.....	63	52	65	65	73	65	65	84	68	7 62
East North Central.....	47	40	52	38	51	43	54	64	49	47
West North Central.....	55	42	42	53	44	31	53	33	38	46
South Atlantic.....	51	55	63	73	81	63	84	57	64	85
East South Central.....	74	63	74	69	63	80	69	143	154	86
West South Central.....	76	66	111	71	87	82	112	76	87	82
Mountain.....	86	57	76	29	57	67	76	86	38	117
Pacific.....	45	65	69	78	90	53	69	106	102	69

\* Tampa, Fla., not included. Report not received at time of going to press.

† Helena, Mont., not included.

‡ Greenville, S. C., not included.

§ Spokane, Wash., not included.

|| Topeka, Kans., not included.

\*\* Newark, N. J., not included.

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*Number of cities included in summary of weekly reports and aggregate population of cities in each group, estimated as of July 1, 1923*

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases	Aggregate population of cities reporting deaths
Total.....	104	96	28,842,382	28,084,966
New England.....	12	12	2,098,746	2,098,746
Middle Atlantic.....	10	10	10,304,114	10,304,114
East North Central.....	16	16	6,976,567	6,976,567
West North Central.....	14	11	2,515,330	2,381,454
South Atlantic.....	22	22	2,566,901	2,566,901
East South Central.....	7	7	911,885	911,885
West South Central.....	8	6	1,124,564	1,023,013
Mountain.....	9	9	546,445	546,445
Pacific.....	6	3	1,707,830	1,275,841

## FOREIGN AND INSULAR

### THE FAR EAST

*Report for week ended September 12, 1925.*—The following report for the week ended September 12, 1925, was transmitted by the Far Eastern Bureau of the Health Section of the League of Nations, located at Singapore, to the headquarters at Geneva:

Port	Plague				Cholera				Small-pox				Port	Plague				Cholera			
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths		Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths
Calcutta	0		5	74	74								Yokohama	0	0	18		0	0	0	0
Bombay	1		0	3	2								Simoneoseki	0	0	0		0	0	0	0
Madras	0		0	10	1								Moji	0	0	0		0	0	0	0
Rangoon	21		0	0	1								Kobe	0	0	6		0	0	0	0
Karachi	1		0	1	1								Osaka	0	0	0		0	0	0	0
Nagapatam	0		1	0	0								Keeling (Formosa)	0	0	0		0	0	0	0
Singapore	0	0	0	0	0								Fou-San-Po (Korea)	0	0	0		0	0	0	0
Port Swettenham	0	0	0	0	0								Adelaide	0	0	0		0	0	0	0
Penang	0	0	0	0	0								Brisbane	0	0	0		0	0	0	0
Batavia	0	0	0	0	0								Fremantle	0	0	0		0	0	0	0
Soerabaya	0	0	0	0	1								Melbourne	0	0	0		0	0	0	0
Samarang	0	0	0	0	0								Sydney	0	0	0		0	0	0	0
Belawan Dell	0	0	0	0	5								Suez	0	0	0		0	0	0	0
Macassar	0	0	0	0	0								Alexandria	1	0	0		0	0	0	0
Sandakan (North Borneo)	0	0	0	0	0								Port Said	0	0	0		0	0	0	0
Kuching (Sarawak)	0	0	0	0	2								Mombasa (Kenya)	0	0	0		0	0	0	0
Bangkok	0	0	0	0	0								Massaua (Eritrea)	0	0	0		0	0	0	0
Saigon and Cholon	0	1	0	0	0								Djibuti	0	0	0		0	0	0	0
Hongkong	0	0	0	0	0								Lourenco Marques	0	0	0		0	0	0	0
Shanghai	0	0	12	19	0								Durban	0	0	0		0	0	0	0
Manila	0	0	0	0	0								Cape Town	0	0	0		0	0	0	0
Colombo	0	0	0	0	0								Mauritius	0	0	0		0	0	0	0
Nagasaki	0	0	0	0	0								Seychelles	0	0	0		0	0	0	0

### CANADA

*Communicable diseases—Ontario—August, 1925 (comparative).*—Communicable diseases were reported in the Province of Ontario, Canada, for the month of August, 1925, as follows:

Disease	August, 1925		August, 1924		Disease	August, 1925		August, 1924	
	Cases	Deaths	Cases	Deaths		Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis	4	1	9	5	Pneumonia	37		3	45
Chancroid	1		1		Poliomyelitis	19	3		7
Chicken pox	133		133		Scarlet fever	141	2	337	
Diphtheria	244	10	269	16	Septic sore throat		3		7
German measles	4		15		Smallpox	7	6		—
Gonorrhea	112		175		Syphilis	112	121		—
Influenza	2	2	18	3	Tuberculosis	133	44	156	74
Lethargic encephalitis	4	2	1	1	Typhoid fever	111	5	120	8
Measles	164		879	3	Whooping cough	305	10	300	4
Mumps	43		180						

**CHINA**

*Cholera—Shanghai.*—Under date of August 22, 1925, cholera was reported prevalent at Shanghai, China, with an estimated number of about 100 new cases occurring daily in a population of about 1,250,000. The case mortality was stated to be approximately 60 per cent.

**JAPAN**

*Cholera—Kawasaki, Tokyo, and Yokohama.*—Information dated September 10, 1925, reports to that date the following number of authentic cases of cholera: Kawasaki, 1 case; Tokyo, 9 cases; Yokohama, 24 cases; and, according to press reports, the disease appeared to be spreading throughout the Kwanto and Kwansai districts.

The Japanese health authorities were stated to be handling the situation efficiently by means of examinations, vaccination, quarantine, and publicity through periodicals and posters. The water supplies of the various large cities had not been implicated.

Special measures as required by the United States quarantine regulations were being taken by service officers with regard to passengers on vessels sailing for United States ports.

Press reports state that, at Kobe, a Chinese steerage passenger suffering from cholera was taken from the steamship *President Lincoln* from Shanghai en route to Yokohama, Honolulu, and San Francisco, and that the vessel was held at pier for examination of all steerage passengers.

**LITHUANIA**

*Smallpox—Typhoid fever—Typhus fever—January 1—June 30, 1925.*—During the six-month period ended June 30, 1925, 4 cases of smallpox, 252 cases of typhoid fever (8 deaths), and 189 cases of typhus fever (10 deaths) were reported in Lithuania.

*Scarlet fever, epidemic.*—During the spring months of the period under report epidemic scarlet fever, with 665 cases, was reported in Lithuania. At Kovno, August 27, 1925, many cases were reported present.

*Vaccination against smallpox and rabies.*—At the Institute of Hygiene during the same period 53,500 vaccinations against smallpox and 160 against rabies were reported.

**MADAGASCAR**

*Plague—July 16–31, 1925.*—During the 16-day period ended July 31, 1925, 10 cases of plague, with 10 deaths, were reported in the island of Madagascar. The occurrence was in the Province of Tananarive. The cases were distributed according to type as follows: Pneumonic, 6 cases; septicemic, 4 cases.

**MALTA**

*Lethargic encephalitis—Malta fever—Typhoid fever—August, 1925.*—During the month of August, 1925, 2 cases of lethargic encephalitis, 90 cases of Malta (undulant) fever, and 27 cases of typhoid fever were reported in the island of Malta. Population, 223,088.

**SPAIN**

*Mortality—Seville—Year 1924.*—During the year 1924 a total of 5,278 deaths was reported at Seville, Spain, the largest number of deaths, viz, 474 and 565, respectively, being reported in the months of January and June. Tuberculosis and meningitis were stated to have been the chief causes of deaths, with 711 and 369 deaths, respectively, during the period under report. Population, 205,529.

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER**

The reports contained in the following tables must not be considered as complete or final as regards either the lists of countries included or the figures for the particular countries for which reports are given.

**Reports Received During Week Ended October 9, 1925<sup>1</sup>****CHOLERA**

Place	Date	Cases	Deaths	Remarks
China: Shanghai				
India: Bombay	Aug. 9-15	1		
Calcutta	Aug. 16-22	8	7	
Madras	Aug. 23-29	4		
Rangoon	Aug. 9-15	1	1	
Japan: Kawasaki	Sept. 10	1		
Tokyo	do	9		
Yokohama	do	24		
On vessel:		1		At Nagasaki. Reported Sept. 2, 1925, arrived on vessel from China.

**PLAQUE**

India: Bombay	Aug. 9-15	3	2	July 19-25, 1925: Cases, 204; deaths, 143.
Madras Presidency	Aug. 2-8	18	6	
Rangoon	Aug. 9-15	28	23	
Java: Batavia	Aug. 8-14	28	26	Batavia Province.
Soerabaya	July 26-Aug. 1	2	2	
Madagascar				July 16-31, 1925: Cases, 10; deaths, 10.
Tananarive Province	July 16-31	10	10	Pneumonic, 6; septicemic, 4.
On vessel: S. S. City of Norwich	Apr. 15	1		At Port Said, Egypt, Apr. 14, 1925, from Rangoon, Colombo, and Perim; destination, London. Case occurred in first officer of vessel.

<sup>1</sup> From medical officers of the Public Health Service, American consuls, and other sources.

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**
**Reports Received During Week Ended October 9, 1925—Continued**
**SMALLPOX**

Place	Date	Cases	Deaths	Remarks
Canada: Ontario				Aug. 1-31, 1925: Cases, 7; corresponding period 1924, cases, 6
China: Nanking	Aug. 23-29			Prevalent.
Swatow	Aug. 16-22			Endemic.
Egypt				January-June, 1925: Cases, 341; deaths, 74.
Great Britain: England and Wales	Aug. 30-Sept. 5	32		
Newcastle-on-Tyne	Sept. 6-12	1		
India				July 10-25, 1925: Cases, 2,403; deaths, 515.
Bombay	Aug. 9-15	1		
Calcutta	Aug. 16-22	4	4	
Madras	Aug. 23-29	10	5	
Rangoon	Aug. 9-15	2		
Indo-China: Saigon	Aug. 17-23	1	1	Including 100 square kilometers of surrounding country.
Italy: Turin	Aug. 31-Sept. 6	2		
Java: Batavia	Aug. 8-14	4		
Soerabaya	July 26-Aug. 1	97	11	Province.
Mexico				January-May, 1925: Deaths, 2,160.
Guadalajara	Sept. 15-21		1	
Mexico City	Aug. 30-Sept. 5	1		Including municipalities in Federal District.
San Luis Potosi	Sept. 13-19		1	
Torreón	Aug. 1-31	2	2	
Spain: Malaga	Aug. 30-Sept. 12		8	

**TYPHUS FEVER**

Place	Date	Cases	Deaths	Remarks
Great Britain: Scotland— Glasgow	Sept. 6-12	1		
Greenock	May		2	
Egypt				January-June, 1925: Cases, 1,011; deaths, 211.
Mexico				January-May, 1925: Deaths, 108.
Mexico City	Aug. 30-Sept. 5	12		Including municipalities in Federal District.

**Reports Received from June 27 to October 2, 1925<sup>1</sup>**
**CHOLERA**

Place	Date	Cases	Deaths	Remarks
Algeria: Algiers	May 11-20	1		
Ceylon				Jan. 25-June 27, 1925: Cases, 172; deaths, 120
Do.				June 28-July 11, 1925: Cases, 19; deaths, 15.
Colombo	May 10-16	2	2	
China: Shanghai	July 26-Aug. 15	82	39	
India				Apr. 26-June 27, 1925: Cases 33,647; deaths, 19,950. June 28-July 18, 1925: Cases, 5,468; deaths, 3,197.
Bombay	May 10-June 27	2	1	
Do.	June 28-Aug. 8	10	7	
Calcutta	May 3-9	58	49	
Do.	May 17-23	79	61	
Do.	June 14-20	12	11	
Do.	July 5-Aug. 15	56	44	
Madras Presidency	June 6-20	4	1	
Do.	July 5-Aug. 22	17	10	
Rangoon	May 3-June 6	22	15	Feb. 8-14, 1925: Cases, 2; deaths, 2. (Received out of date.)
Do.	June 14-27	12	8	
Do.	June 28-Aug. 8	4	5	

<sup>1</sup> From medical officers of the Public Health Service, American consuls, and other sources.

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

## Reports Received from June 27 to October 2, 1925—Continued

## CHOLERA—Continued

Place	Date	Cases	Deaths	Remarks
Indo-China:				
Saigon	May 4-June 7	4	3	
Do	June 22-July 12	3	2	
Do	Aug. 3-9	1	1	Including 100 square kilometers of surrounding country.
Japan:				
Kobe	Sept. 4-6	5	2	
Yokohama	Sept. 2	5	3	
Philippine Islands:				
Albay—				
Tabaco	June 14-20	1	1	
Bulacan	do	1	1	
Do	June 28-July 18	3	2	
Camarines Sur	July 3-9	1		
Lagonoy	June 6-12	2	1	
Leyte	July 8-14	1	1	
Manila	June 15-28	3		
Do	June 29-Aug. 16	17	4	June 1-Aug. 8, 1925: Cases, 17.
Mountain Province	June 23-29	1	1	
Rizal Province	Aug. 2-8	2		
Siam:				
Bangkok	Apr. 29-June 27	9	4	
Turkey:				
Constantinople	May 16-22	1		

## PLAQUE

Brazil:				
Bahia	May 3-June 13	5	4	
British East Africa:				
Uganda	Feb. 1-28	28	28	
Entebbe	May 4-June 4	78	73	Apr. 1-May 31, 1925: Cases, 129; deaths, 118.
Ceylon:				
Colombo	May 10-June 30	11	10	
Do	June 28-July 25	9	7	
Do	Aug. 2-15	2	2	
China:				
Foochow	May 24-31			Reported present in epidemic form.
Nanking	July 25-Aug. 22			Present.
North Manchuria	May 27	2	1	
Ecuador:				
Guayaquil	June 1-15	1	1	May 16-June 30, 1925: Rats examined, 30,347; found infected, 95. July 1-Aug. 15, 1925: Rats taken, 31,306; rats found infected, 107.
Egypt:				Jan. 1-Aug. 19, 1925: Cases, 98. Corresponding period year 1914: Cases, 347.
City—				
Alexandria	June 17-24	2	2	Bubonic.
Port Said	June 17-Aug. 6	8	3	
Do	July 30-Aug. 16	3	1	
Suez	June 14-27	3	2	
Do	Aug. 19	1	1	Septicemic.
Province—				
Assiout	June 5	1	1	
Beni-Souef	June 10-16	8	4	
Do	Aug. 6-12	5	2	
Charkieh	June 6-8	1	1	
Kena	June 17	1	1	
Minia	June 6-17	3	2	
France:				
Marseille	Aug. 13-18	3		
Gold Coast:				
Greece:				
Athens	July 1-Aug. 14	26		
Piraeus	July 18-Aug. 14	9		

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**
**Reports Received from June 27 to October 2, 1925—Continued**
**PLAQUE—Continued**

Place	Date	Cases	Deaths	Remarks
Hawaii Territory:				
Honokaa	June 28			Plague-infected rat.
Do.	Aug. 7	1		
Do.	Aug. 15			Plague-infected rat, near Paauilo
Kukuhaele	July 31			Plague-infected rat.
Paauhau	Aug. 12			Do.
India:				
Bombay	Apr. 26-June 27	65	59	Apr. 26-June 27, 1925: Cases: 10,166; deaths, 8,913. June 28-July 18, 1925: Cases, 614; deaths, 445.
Do.	June 28-Aug. 25	13	9	
Calcutta	May 30-June 6	1	1	
Do.	July 5-11		1	
Karachi	May 18-June 6	4	3	
Do.	July 31-Aug. 6	1	1	
Madras	May 10-June 27	15	8	
Do.	June 28-Aug. 1	20	7	
Rangoon	May 3-June 27	113	95	Feb. 8-14, 1925: Cases, 13; deaths, 13. (Received out of date.)
Do.	June 28-July 4	20	18	
Do.	July 12-Aug. 8	85	72	
Indo-China:				
Cochin-China—				
Saigon	Apr. 20-June 21	3	3	Including 100 square kilometers of surrounding country.
Iraq:				
Bagdad	May 24-June 6	9		
Do.	June 21-27	5	1	
Java:				
Batavia	May 6-June 19	32	31	In Province.
Do.	July 5-31	65	65	
Cheribon	Apr. 1-June 13		78	
Do.	July 11-17	1	1	
Pasoeroean Residency	Mar. 7-May 25			Epidemic in several localities.
Do.	July 13			Do.
Pekalongan	Apr. 9-June 13		86	
Soerabaya	May 7-27	3	3	
Do.	June 28-July 4	16	1	
Soerakarta Residency	May 28			Epidemic at Kalidgambe.
Tegal	Apr. 2-May 16		36	
Do.	May 24-June 13		16	
Madagascar:				
Province—				
Itasy	Apr. 1-15	1	1	Bubonic, 3; septicemic, 1.
Do.	July 1-15	4	4	
Tananaarive	Apr. 1-June 30	232	200	Bubonic, 5; pneumonic, 2; septi-cemic, 2.
Do.	July 1-15	9	9	
Town—				
Tamatave (port)	Apr. 1-15	2		
Do.	June 1-7		1	
Tananaarive Town	Apr. 16-May 31	5	5	
Mauritius				April, 1925: One case.
Nigeria:				
Do.	December, 1924	17	13	
Do.	January, 1925	10	6	
Do.	March-May	25	18	
Peru:				
Callao	July, 1925			Present. Press reports.
Cafeete	August, 1925			Do.
Lima	Aug. 14	14		Press reports.
Russia:				
Kalmkyk District	May 19-31	10	8	
North Caucasus	June 6-7	2	2	
Urts	May 25-June 3	2	2	
Siam:				
Bangkok	Apr. 26-June 20	13	11	
Do.	June 28-Aug. 8	4	4	
Straits Settlements:				
Singapore	May 3-30	9	9	
Do.	June 28-July 18	2	2	
Tunis:				
Tunis	Aug. 12-18			Plague rodent.
Turkey:				
Constantinople	May 25-31	1		

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from June 27 to October 2, 1925—Continued

## PLAQUE—Continued

Place	Date	Cases	Deaths	Remarks
Union of South Africa:				
Cape Province—				
Kimberley.....	June 14-20.....	1	1	In a Malay camp.
Do.....				One plague-infected house mouse.
Orange Free State—				
Boshof District.....	June 28-Aug. 8.....	3	2	Natives.
On vessel:				
Steamship Efstratis Ca-voundis.....	July 7-11.....	4	1	At Alexandria, Egypt. Vessel arrived July 7, 1925. Regular route, ports in Syria, Greece, and Port Said. Dead rats reported found on board.
Steamship Arcadia.....	July 24-27.....	2	—	At Piraeus, Greece, from Alexandria, Egypt.
Steamship Anatolia.....	Aug. 8.....	1	—	Do.

## SMALLPOX

Algeria:				
Algiers.....	May 1-June 30.....	43	2	
Do.....	July 1-Aug. 20.....	67	—	
Constantine.....	do.....	47	—	
Brazil:				
Bahia.....	June 28-Aug. 22.....	7	6	
Pernambuco.....	Apr. 26-May 30.....	40	21	
Do.....	June 7-27.....	5	3	
Do.....	July 5-18.....	1	1	
Porto Alegre.....	June 14-20.....	—	1	
Do.....	Aug. 9-15.....	—	1	
Rio de Janeiro.....	May 9-June 27.....	5	1	
Do.....	June 28-Aug. 15.....	122	36	
British East Africa:				
Kenya—				
Mombasa.....	Apr. 19-June 20.....	27	13	
Do.....	July 5-Aug. 8.....	56	9	
Nairobi.....	May 3-9.....	3	2	
Tanganyika Territory.....	Apr. 5-May 23.....	82	24	
Do.....	June 14-27.....	48	3	
Uganda.....	Feb. 1-28.....	2	—	
British South Africa:				
Northern Rhodesia.....	Apr. 28-May 4.....	3	—	
Southern Rhodesia.....	June 11-July 1.....	2	—	
Bulgaria:				
Sofia.....	Aug. 6-19.....	2	—	
Canada:				
Alberta—				
Calgary.....	Aug. 2-8.....	1	—	From Crossfield, Alberta.
British Columbia—				
Vancouver.....	June 1-28.....	7	—	
Do.....	July 6-Sept. 13.....	15	1	
New Brunswick—				
Restigouche County.....	June 1-30.....	1	—	
Ontario—				
Galt.....	June 14-20.....	2	—	May 31-July 25, 1925: Cases, 20; deaths, 1. Corresponding period, 1924: Cases, 24.
Kingston.....	do.....	1	—	
Do.....	Aug. 23-29.....	1	—	
North Bay.....	June 28-July 18.....	3	—	
Quebec—				
Quebec.....	July 26-Aug. 1.....	2	2	
Saskatchewan—				
Regina.....	May 24-30.....	3	—	
China:				
Amoy.....	May 17-June 30.....	—	7	
Do.....	July 12-Aug. 8.....	—	—	Present.
Antung.....	May 11-June 27.....	7	—	
Do.....	June 28-Aug. 9.....	3	—	
Canton.....	May 10-June 13.....	—	—	
Chungking.....	May 3-30.....	—	—	Do.
Foochow.....	May 9-Aug. 15.....	—	—	Widespread.
Hongkong.....	Apr. 19-June 13.....	15	12	Present.
Do.....	July 19-25.....	1	—	

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**
**Reports Received from June 27 to October 2, 1925—Continued**
**SMALLPOX—Continued**

Place	Date	Cases	Deaths	Remarks
China—Continued.				
Manchuria—				
Dairen	Apr. 13-June 28	115	17	
Do	June 28-July 26	4	2	
Harbin	May 13-June 2	2		
Nanking	May 9-Aug. 15			Present.
Shanghai	May 3-June 6	5	2	
Do	July 6-25	1	1	
Swatow	May 17-Aug. 15			
Tientsin	May 9-June 6	3		
Do	July 12-18	1		
Chosen	January-April	1,067	243	
Seoul	May 1-June 30	2		
Egypt:				
Alexandria	May 21-27	1	1	
Cairo	Mar. 19-May 13	5		
Do	June 18-24	17	5	
France...	May 21-31	1		
Paris				February-June, 1925: Cases, 102.
Germany:				
Baden (State)	July 12-25	2	1	
Stuttgart	July 5-11	3	1	
Gold Coast				
Great Britain:				
England and Wales				
Birmingham	July 7-13	1		
Cardiff	June 14-20	1		
Do	Aug. 2-8	14	8	
Newcastle-on-Tyne	May 31-June 27	4		
Do	June 28-Sept. 5	9	1	
Greece...				
Athens	May 1-31	2		
Do	June 24-30	27	3	
Do	July 1-31	14	1	
Haiti:				
Port au Prince	Aug. 23-29	1		Reported at Jean Rabel Aug. 27.
Hungary:				
Budapest	July 5-18	13		
India...				
Bombay	Apr. 26-June 27	156	115	
Do	June 28-July 4	15	10	
Do	July 19-Aug. 8	9	7	
Calcutta	May 3-9	109	100	
Do	May 17-23	75	61	
Do	May 31-June 20	88	81	
Do	July 5-Aug. 15	54	43	
Karachi	May 18-June 27	6	1	
Do	June 28-July 4	1	1	
Madras	May 18-June 27	152	66	
Do	June 28-July 18	68	25	
Do	Aug. 2-22	67	21	
Rangoon	May 3-June 27	207	99	
Do	June 28-July 4	2	1	
Do	July 12-Aug. 8	22	11	
Indo-China:				
Cochin-China—				
Saigon	Apr. 20-May 21	13	9	Including 100 square kilometers of surrounding country.
Iraq...				
Bagdad	Apr. 26-June 20	4	1	
Italy...				
Do	Dec. 28-June 27	97		
Catania	June 28-July 4	9		
Syracuse Province	Aug. 17-23	1		
Turin	do	1		
Venice	Aug. 17-30	4		
Jamaica...				
Kingston	Apr. 26-June 27	19		Apr. 26-June 27, 1925: Cases, 110.
Do	June 28-Aug. 29	35		June 28-Aug. 29, 1925: Cases 102 (reported as alastrim).
				Reported as alastrim.
				Do.

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

Reports Received from June 27 to October 2, 1925—Continued

## SMALLPOX—Continued

Place	Date	Cases	Deaths	Remarks
Japan:				
Kobe	May 24-June 27	2		
Nagasaki	May 15-21	2		
Do.	July 6-19	1	1	
Taiwan	June 1-30	11		
Do.	July 1-10	1		
Tokyo	June 14-20	1		
Yokohama	May 25-June 12	3		
Java:				
Batavia	May 2-June 26	2		
Do.	July 4-31	5		
Brebes	Apr. 22-28	1		
Cheribon	Apr. 16-22		1	
Kediri Residency	July 14			Epidemic.
Pekalongan	Apr. 2-8	1		
Rembang Residency	Apr. 23			Epidemic at Kawedanan.
Soerabaya	Apr. 16-June 27	304	41	
Do.	June 28-July 25	211	25	
South Bantam	Apr. 16-22	1		
Tegal	Mar. 29-May 2	2	1	
Latvia				
Lithuania				
Malta:	June 1-30	9		
Do.	July 1-31	5		
Mexico:				
Durango	do	11		
Do.	July-August	22		
Guadalajara	June 2-29	10		
Do.	June 20-Aug. 31	16		
Mexico City	May 24-June 27	12		Including municipalities in Federal district.
Do.	July 5-11	3		Do.
Do.	July 26-Aug. 15	7		Epidemic at El Huile and other localities.
Oaxaca, State	Aug. 14			
San Luis Potosi	Aug. 16-Sept. 12	3	1	
Tampico	June 1-10		1	
Do.	July 1-31	4	2	
Morocco:				
Tangier	May 17-June 5			
Nigeria:				
Do.				Present among natives.
Persia:				December, 1924: Cases, 40; deaths, 16.
Teheran	Mar. 21-May 21			January, 1925: Cases, 1,538; deaths, 132.
Peru:				
Arequipa	June 1-30		1	
Poland:				Mar. 1-June 27, 1925: Cases, 41.
Portugal:				
Lisbon	Apr. 26-June 27	36	6	
Do.	June 28-Aug. 15	40	14	
Oporto	June 14-20	1		
Do.	July 19-Aug. 29	7		
Rumania				
Russia:				
Do.	April	490		
Siam:				
Bangkok	Apr. 26-June 27	27	19	January-May, 1925: Cases, 22; deaths, 1.
Do.	June 28-July 11	2	1	December, 1924: Cases, 1,000.
Spain:				January-March, 1925: Cases, 5,243. Later than previously published reports.
Malaga	May 24-June 20		15	
Do.	July 5-Aug. 29		21	
Valencia	May 31-June 27	3	1	
Straits Settlements:				
Singapore	May 17-23	1		
Do.	July 5-11	1	1	
Sumatra:				
Pedang	July 12-25	1		
Switzerland:				
Berne	June 7-13	1		
Lucerne	June 14-20	4		
Syria:				
Beirut	Apr. 21-30	1		

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued**
**Reports Received from June 27 to October 2, 1925—Continued**
**SMALLPOX—Continued**

Place	Date	Cases	Deaths	Remarks
Tripoli.				
Tunis:				Jan. 3-April 15, 1925: Cases, 14.
Tunis.	May 6-June 30.	46		
Do.	July 1-Sept. 8.	49		
Turkey:				
Constantinople.	May 16-22.	2		
Union of South Africa:				Outbreaks.
Cape Province.	May 24-Aug. 8.			
Pretoria.	Apr. 18-25.	8	1	
Transvaal.	May 3-June 6.			
Uruguay:				
Do.				Do.
				December, 1924: Cases, 8.
				February-April, 1925: Cases, 10.

**TYPHUS FEVER**

Algeria:				
Algiers.	May 11-20.	6	2	In vicinity, 12 cases. Isolated.
Do.	July 1-Aug. 20.	18	8	
Constantine.	July 1-10.	17		District.
Do.	July 21-31.	7		Department.
Oran.	—do—	8		Do.
Bulgaria:				November-December, 1924: 1 case. January-June, 1925: Cases, 124; deaths, 7.
Sofia.	May 28-June 3.	2		
Chile:				
Iquique.	Aug. 8-22.		2	
Valparaiso.	May 10-July 18.		9	
China:				
Manchuria—				
Harbin.				
Czechoslovakia:				
Egypt:				
Alexandria.	May 7-June 3.	3	1	
Do.	July 9-15.	1		
Cairo.	Mar. 26-May 13.	6	4	
Port Said.	May 14-20.	1	1	
Do.	July 30-Aug. 12.	4	1	
Do.	Aug. 20-26.	3		
Estonia.				
Great Britain:				Apr. 1-May 30, 1925: Cases, 6.
Scotland—				
Greenock.	Aug. 6-18.	7		
Greece:				
Athens.	May 1-31.		2	January-June, 1925: Cases, 57; deaths, 6.
Do.	July 1-31.	3		
Kalamata.	Apr. 1-30.		2	
Patras.	June 28-July 4.		2	
Iraq:				
Bagdad.	July 12-18.	1		
Ireland:				
Cork County.	Aug. 25.	3		April-June, 1925: Cases, 26.
Latvia:				
Liepau.	July 14-20.	1		
Lithuania.				
Mexico:				
Mexico City.	May 24-June 6.	24		Including municipalities in Federal district.
Do.	June 28-Aug. 1.	39		Do.
Do.	Aug. 16-29.	13		Do.
San Luis Potosi.	June 26-July 4.		1	
Tampico.	Aug. 20-31.	1		
Morocco				January-June, 1925: Cases, 421. Later than previously published reports.

**CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued****Reports Received from June 27 to October 2, 1925—Continued****TYPHUS FEVER—Continued**

Place	Date	Cases	Deaths	Remarks
Palestine:				
Dagania	July 21-27	1		
Ekron	do	1		
Haifa	Aug. 20	1		
Jaffa district	June 28	2		
Do	Aug. 20	1		
Jerusalem	July 20-Aug. 3	2		
Majdal	May 26-June 8	3		
Ramleh	May 19-25	1		
Safad	June 9-15	1		
Do	July 21-27	1		
Tel Aviv	do	1		
Persia:				
Teheran	Apr. 21-May 21		1	
Peru:				
Arequipa	Apr. 1-June 30		3	
Do	July 1-31		1	
Poland				
Portugal:				
Oporto	May 31-June 6	1		
Do	July 5-11	1		
Rumania	January-May	1,360	152	
Constantza	May 1-June 30	2		
Russia				
Do	April	5,512		
Spain:				
Seville	Aug. 20-26		1	
Valencia	June 7-13		1	
Tunis:				
Tunis	May 21-June 17	16	8	
Do	July 8-Sept. 8	12	5	
Turkey:				
Constantinople	May 11-31	7	2	
Union of South Africa				
Cape Province	Apr. 19-July 25	39	5	June, 1925: Cases, 61; deaths, 4.
Natal	May 3-July 11	14		June, 1925: Cases, 26; deaths, 1.
Durban	Feb. 1-July 4	18		June, 1925: Cases, 2.
Orange Free State	Feb. 1-June 27	26	4	December, 1924: Cases, 5,062.
Hoopstad	July 5-11			January-March, 1925: Cases, 24,595. Later than previously
Transvaal	do	11	2	published reports.
Johannesburg	July 19-25	1		
Yugoslavia:				
Belgrade	June 8-14	1		
Zagreb	May 8-21	7	1	

**YELLOW FEVER**

Gold Coast	Apr. 1-30	1		
Ivory Coast:				
Lahou	June 1-10	1	1	
Liberia:				
Monrovia	Aug. 7	4		
Nigeria:				
Ibaden	Apr. 21-30	1		
Lagos	Apr. 29-May 5	4	1	